RADIO AMATEUR

- Cosmonaut U2MIR visits Melbourne
- Review — ICOM IC-R7100 Receiver
- 1992 Annual Index
- Accredited Examiners List

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THE WIA RADIO AMATEUR'S JOURNAL

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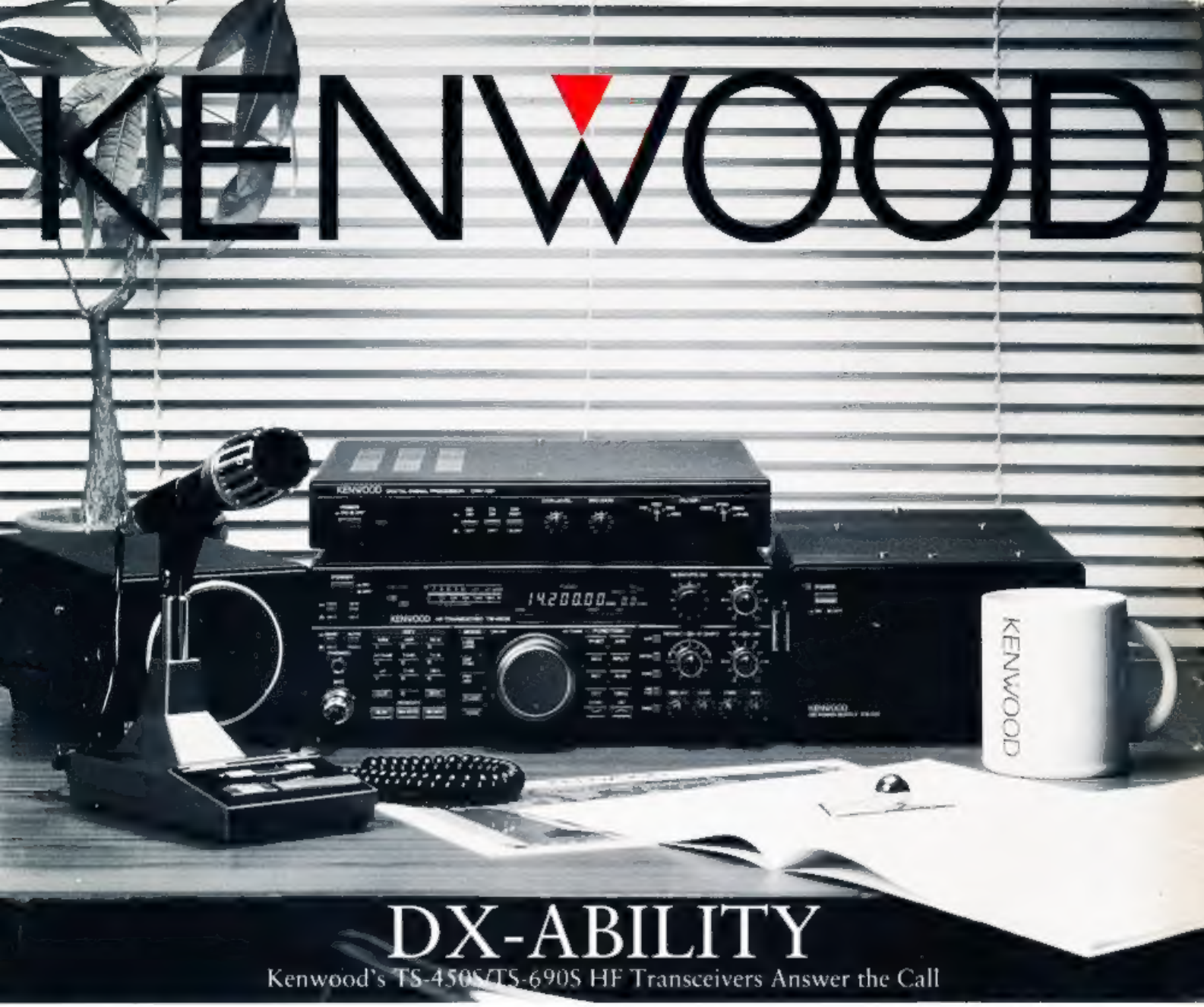

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AMATEUR RADIO

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Cover

Maggie Iaquinto VK3CFI and Cosmonaut Musa Manarov U2MIR in the foyer of the Sheraton Towers Southgate Hotel, Melbourne, Wed 2nd December 1992. They are holding Musa's certificate of Honorary Life Membership of the WIA, (Vic Div), presented to him that evening by Divisional President Jim Linton VK3PC. Photo by Peter Ormerod VK3CPO. See story on page 7.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest National Radio Society Founded 1910

Representing the Australian Amateur Radio Service — Member of the International Amateur Radio Union
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Editor's Comment

Bill Rice VK3ABP

Editor

A Mixed Bag

From time to time this magazine has carried editorials with titles like "Loose Ends, "Bits and Pieces", "Sundry Topics", "Disconnected Jottings" and "Miscellaneous Observations". Here is another collection of comments on unrelated items.

First, this issue has for some years been the annual collection of information on all sorts of things; The February "Data Issue". This year we have pruned off much of the data for two reasons. Such things as repeater listings have changed very little since they were published in the Call Book only a few months ago. The DXCC list of Countries, on the other hand is changing so fast, at least in Europe at present, that it seems better to wait until some of the dust settles! There have been no significant changes in bandplans since the Call Book. We are including the list of videotapes and the stolen equipment list, because they were not included in the current Call Book.

There is another reason for cutting back the data issue. We have a substantial backlog of general interest articles, and some of the authors are beginning to wonder if they will ever be published. We really need the space so that we can catch up a bit on the backlog. But please note that this is only a general interest backlog. **WE ALWAYS WANT TECHNICAL ARTICLES!**

One of the technical areas in which much interest has been shown recently is that of Interference Cancellation. We have had two articles by Lloyd Butler VK5BR, and in this month's Technical Abstracts, Gil Sones refers to a RadCom article on the same theme. Unfortunately there was an error in last month's article by VK5BR. So if you tried it and couldn't get it to work, check the value of R4. It should be 1000 ohms, NOT 100K! The mistake was entirely ours; Lloyd's material was correct.

Back to the Call Book for a moment. Have a look at the repeater listings; particularly note the group or organisation shown as the sponsor for each repeater. In VK3 and VK5, almost all are financed and maintained by the WIA. In other States, many of the responsible clubs or groups have WIA affiliation. But it is traditional that repeaters are open to all.

Free-loaders

Nevertheless, a very regular user of one of the WIA supplied, installed, and maintained repeaters in Melbourne, was recently heard asking for a particular issue of AR magazine. When asked why he did not have his own copy, he explained "I'm not a member"!

The nicest thing one can say about such people is to call them "free loaders". The Australian vernacular has numerous picturesque phrases for people who "sponge off their mates". Perhaps a few such words need to be murmured into a few more ears? **ar**

WIA News

From the WIA Federal Office

Delivery of Amateur Radio Magazine

As advised in WIA-NEWS in the December 1992 issue the WIA changed over to an alternative delivery service for delivery of the magazine to 64% of members. Worthwhile savings were expected, and delivery was guaranteed to be comparable to the Australian Post Office.

It was a great idea at a time when the WIA is holding membership fees down, and continually looking for cost savings. However, as too many members found out, it turned into a fiasco. A considerable number of members did not receive their December magazines until late in the month. Many members still have not received their December magazine.

The Federal Office mailed out all the reserve stocks of the December issue (well over 150) as replacement magazines, but still reports are being received of members not having received this issue. Now we do not have any December ARs left to send to them.

I know that many of those to whom we mailed replacement magazines subsequently received the original copy from the delivery service.

It would be appreciated if these members could send the duplicate copy back to this office so that we can send it to those who still have not received the December issue.

A much greater percentage of the January 1993 issue was delivered satisfactorily, but far too many were delivered late, and some members have still not received their copy.

If you still have not received the January issue by the time this issue arrives, please let the Federal Office know and we will forward you a replacement copy.

Needless to say, the alternative delivery organisation has been sacked for lack of performance. We can all breath a sigh of relief that this, and future issues of our magazine, will again be delivered by APO, even though they are expensive, and erratic at times.

AR Magazine 20 Year Index

Reaching back to 1968, this index of articles published in *Amateur Radio* magazine is available on disk and in hard copy from the Federal Office.

Disks can be obtained in ASCII format for $10.00 each (inc. postage), on both 3.5" and 5.25" floppies.

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Divsion, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers		
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Secretary Treasurer	Christopher Davis Jan Burrell Ken Ray	VK1DO VK1BR VK1KEN
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124 Phone (02) 689 2417 Fax (02) 633 1525	President Secretary Treasurer (Office hours	Terry Ryeland Bob Lloyd Jones Bob Taylor Mon-Fri 11.00-14.00 Wed 1900-2100)	VK2UX VK2YEL VK2AOE
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Secretary Treasurer Office hours	Jim Linton Barry Wilton Rob Hailey Tue & Thur 0830-1530	VK3PC VK3XV VK3XLV
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Secretary Treasurer	John Aarsse Ken Ayers David Travis	VK4QA VK4KD VK4ATR
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Bob Allen Roland Bruce Bill Wardrop	VK5BJA VK5OU VK5AWM
VK6	West Australian Division PO Box 10 West Perth WA 6005 Phone (09) 388 3888	President Secretary Treasurer	Cliff Bastin John Farnan Bruce Hedland-Thomas	VK6LZ VK6AFA VK6OO
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015	President Secretary Treasurer	Tom Allen Ted Beard Peter King	VK7AL VK7EB VK7ZPK
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).			

Note: All times are local. All frequencies MHz.

Weekly News Broadcasts		1993 Fees
3.570 MHz	(F)	$70.00
2m ch 6950 Rebroadcast Mondays 8pm	(G) (S)	$56.00
70 cm ch 8525 2000 hrs Sun	(X)	$42.00
From VK2WI 1.845, 3.595, 7.148*, 10.125, 24,950, 28.320, 52.120, 52,525, 144.120, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay via a local 2 metre repeater. Sunday 1000 and 1915. Highlights included in VK2AWX Newcastle Monday 1930 on 3.593 plus 10mx, 2mx, 70cm, 23cm. News headlines by phone (02) 552 5188. Some broadcast text can be found on the Packet network.	(F) (G) (S) (X)	$86.75 $53.40 $38.75
1.840MHz AM, 3.615 SSB, 7.085 SSB, 53.900 FM(R) Mt Dandenong, 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) (G) (S) (X)	$72.00 $58.00 $44.00
1.825, 3.065, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) (G) (S) (X)	$70.00 $56.00 $42.00
1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, 145.000 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North,(146.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555m 146.5000, 0900 hrs Sunday	(F) (G) (S) (X)	$70.00 $56.00 $42.00
146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) 147.225(R), 147.250(R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker broadcast repeated on 146.700 at 1900 hrs.	(F) (G) (S) (X)	$60.75 $48.60 $32.75
146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) (G) (S) (X)	$67.00 $53.65 $39.00

Membership Grades

Full (F) Pension (G)
Needy (G) Student (S)
Non receipt of AR (X)

Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Hard copy costs $10.00, including postage.

However, the database file format (.DBF) is more useful if you have suitable software, as it makes searching and viewing easier.

For those with a computer who do not have software facilities to read and search .DBF files, the index can now be obtained with software that allows viewing, searching and updating. All you have to do is request it.

In .DBF format, the index can be obtained on 3.5" disks for $10.00 each (inc postage), or on 5.25" disks for $12.00 each (inc postage).

The software for viewing and searching the .DBF format index was written and has kindly been provided free of charge by Nigel Dudley VK6KHD.

Call for Papers on Education

The ARRL has called for papers for the 1993 edition of *Proceedings of the ARRL National Educational Workshop.* Topics should cover curriculum development, training techniques, acceptance of ham radio in school systems, one-on-one tutoring, and working with youths, seniors and the disabled.

The 1992 edition of the *Proceedings* was reviewed in Brenda Edmonds' "Education Notes" in the July 1992 issue of AR.

Papers are due at the ARRL by 29 June, 1993. Contact Tracy Simpson, c/o ARRL, 225 Main St., Newington CT 06111 for an author's kit.

Weather Fax From Antarctica

A new station transmitting weather charts by facsimile (fax) on HF from Antarctica has joined the well-known Bureau of Meteorology HF weather fax stations AXM (Melbourne) and AXI (Darwin).

Located at Casey Base on the Antarctic continent, the new station signs VLM and runs 1 kW FSK. It was announced by the Bureau of Meteorology, Tasmanian and Antarctic Region late in December.

Meteorological charts from the Bureau's three stations can now be received from 25° North to around 80° South on an "all-day, all year round service", the Bureau says.

A schedule booklet setting out times, frequencies, data and chart reading information for AXM, AXI and VLM is available from the Bureau's Melbourne office. Write for an application form, to:
Angus Low
Bureau of Meteorology
c/- PO Box 1289K
Melbourne Vic 3001.

Emerging Communication Technologies

The telecommunication regulator, AUSTEL, will report to the Federal Government by the middle of this year on emerging technologies in Australia aimed at providing "personal communication services" (PCS).

These new services use a broad range of "wireless-based" (ie radio) communication services together with computer networking technology to provide a sophisticated mobile-portable network.

Both voice and digital data communication technologies are involved. The WIA has an active monitoring watch on these developments to assess the possible impact on the Amateur Service.

ITU Restructuring

The International Telecommunication Union (ITU) is progressing with work on a substantial revision of its structure and operation, driven by rapid technological change and the integration of technologies into new value-added services and the globalisation of networks and services.

It is the third major restructuring undertaken by the ITU in its 127-year history.

According to an ITU press release dated 30 November 1992, the High Level Committee (HLC), established in 1989, put up 96 recommendations to be considered by a conference held in Geneva last December.

These developments will have substantial impact on radiocommunication services, including the Amateur Service, throughout the world in the coming decade.

The ITU has developed as a major standards-making body, with two technical subsidiaries — the radio consultative committee (CCIR) and the telecommunications consultative committee (CCITT).

The release said the HLC recommended that these committees" standards-setting activities be consolidated into a "Standardization Sector", while the other CCIR activities be merged with the ITU's International Frequency Registration Board to form a "Radiocommunication Sector".

The HLC's recommendation envisages the Radiocommunication Sector operating through Radiocommunication Conferences and Study Groups ('mini-WARCs', if you like), a Radio Regulation Board and a permanent Bureau headed by a Director, according to the ITU release.

Conferences would consider regulatory and technical matters and review the Radio Regulations. There would not be ad hoc conferences (as in the past), but would be held every two years in an attempt to "bridge the gap" between the Radio Regulations and the radiocommunication environment, the release said.

This "gap" develops as a result of the rapid development in technology; a WARC every decade is no longer able to cope.

In terms of the Amateur Radio Service, this means more active and continuous work for the world's radio amateur societies, including the WIA — perhaps more so in our region than other parts of the world because of the rapidly burgeoning communications environment in the Asia-Pacific region, in which Australia is a principal player.

WIA Policy Revamp

The WIA Federal Board has completed a major revamp of twelve Federal Policy items, covering topics such as Amateur Television and Packet Operation, QSL Bureaux and Novice Licensing, Education and Public Relations.

Policies are essentially dynamic documents, and must change with changing circumstances, reflecting trends in amateur activities and requirements. You may note that some originated a scant few years ago.

These policies are used to "guide" the actions and activities of the Federal WIA. They do not serve as "dogma" or "dictates" to the members, or the amateur community at large, for that matter. Guidelines serve the greater interest, not the purposes of a few.

They have been formulated through wide discussion and consultation among the Divisions and members, and the wider amateur population, and refined through debate at Divisional and Federal level.

As AR magazine serves as a "journal of record" among its other functions, we will be publishing the updated policies over the coming months. Space limitations prevents us publishing them all at once.

This issue, three have been selected for their particular importance and topical interest.

QSL Bureaux

This Board NOTING:

The report on QSL bureaux in the WIA prepared by VK2PS in response to Council resolution 89.10/2 which was distributed to all Federal Councillors and Executive members;

IARU Misc Rule 3(b) concerning member societies accepting inwards QSL cards for collection by non-members;

There are no legal constraints on the disposal of QSL cards received; and

QSL cards have PR value and are collected by the Federal QSL card curator for this purpose.

This Board AGREES:

There is no case at present for a single national QSL bureau for Australia, and AGREES the existing arrangements of Divisional bureaux with Federal Office providing the VK0 & VK9 bureau continue.

As a general principle QSL bureau services be available to all amateurs, members desirably free or for handling costs, non-members to pay at least cost recovery charges WITHOUT exception.

Outwards cards for members should be sent desirably free or for handling costs.

Outwards cards for non-members may be processed for a handling fee where cards are delivered free of charges to the bureau.

Inwards cards be made available free of charge to members at a point of distribution at least monthly and Divisions may require members to pay postal charges if onwards posting is required.

Inwards cards be made available to non-members at the bureau distribution point, however transportation and sorting costs will be imposed.

Incoming cards not collected after 6 months be disposed of by what ever means the Division decides and this policy receive wide publicity.

It is desirable to obtain written advice from operators who do not wish to receive QSL cards.

and ENCOURAGES:

Divisions to revise their QSL bureau administration systems to streamline operations and attract volunteer labour yet meet local audit requirements.

Amateurs to use the interim standard IARU QSL card size of 140 mm by 80 mm, of a minimum paper weight of 100 gsm, laid out with all QSO information contained upon one side and DIRECTS the Federal Office to give these specifications maximum publicity; and,

DIRECTS the Federal Office to prepare an Australian pamphlet (in several languages) on QSLing for local and overseas distribution. Key contents are to include correct bureau addresses however it could extend to include procedures, card sizes etc; and,

RECOMMENDS smaller Divisional QSL bureaus examine the feasibility of increasing the frequency of outwards despatches by grouping up with other bureaus to create economic mailing packages.

References: IARU Misc Rule 3(b) 82.098 90.07.01/EC
Previous version: 90.07.01/EC
Revised: Jul 92 Board meeting, VK2 input and Oct 92 Board meeting
Adopted: Oct 92 Board meeting

Novice Licensing

This Board NOTING:

The Novice licence was introduced as a means of entry introduction into amateur radio.

The original licence intent was to provide limited tenure, with low powered, crystal controlled emissions in the CW mode.

Its introduction provided access to several HF bands.

Following introduction of the licence, representations led to enhanced conditions and access to portion of the 2 metre FM band; and

These various modifications to the licence conditions narrowed the gap between NAOCP and AOCP privileges.

This Board:

AGREES there should be no licence grade lower in technical qualifications than novice.

OBSERVES that any substantial increase in novice privileges would further reduce the differential between the existing grades of licences.

SUPPORTS the recruiting and education of persons to the novice level NOTING the operating training and on-air experience it provides.

RESOLVES to seek a codeless limited novice licence with VHF/UHF operating privileges only.

RECOGNISES the ongoing benefits of education and operating to enable upgrading to the privileges of higher grades of licences.

RECOGNISES the matter of increased novice privileges has been raised on frequent occasions in the past and RESOLVES to maintain the status-quo as long as the band segments available to Australian amateurs remain unchanged. In particular this applies to the 80 metre band segment assigned to novices.

RECOGNISES the popularity of the relatively narrow and crowded 80 metre band segment and RECOMMENDS local operations, where practical, be on the 10 metre and 2 metre bands.

References: 76.20.02 86.09.01/1 89.04.22/2
Previous version: 82.092/1 Appendix C7
Revised: May 92 & Jul 92 Board meeting (no changes made)
Adopted: Oct 92 Board meeting

Packet Radio BBS Guidelines

This Board CONSIDERING:

The value in providing guidance on aspects of packet radio bulletin board operations.

This Board RESOLVES that:

Packet Bulletin Board systems operators be requested to observe the following guidelines:

Service Level

When an individual or group decides to establish a Bulletin Board, its Service Level must also be established and publicised. The Service Level is a description of what services will be provided.

As part of the service definition, the Service Area of the BBS should also be defined. This is a description of what area the BBS will service, and would normally define from where the BBS would accept users who use the BBS as its home BBS, and where the BBS would forward to PMS systems if these are supported.

Beaconing

A BBS should beacon regularly only within its service area and the period

should not be shorter than one beacon every 30 minutes.

Software

The software to be used is the choice of the BBS operator. If the BBS is to interface to the mail forwarding network, then the software should support, at a minimum, BIDS and Hierarchical forwarding.

Users

Users should be treated courteously. Likewise, Users should treat Sysops courteously. Excluding a user from a BBS should only be done on wilful and persistent breaches of these guidelines.

Mail Forwarding

Where the mail forwarding is conducted on user frequencies, it should be restricted to non-peak times or other time to minimise the intrusion on the normal operation of non BBS traffic. If forwarding takes place on dedicated frequencies, then no restrictions apply.

Message Sizes

Where a message may be routed via HF, the message should be restricted to 3 K bytes in length. For more reliable paths, longer messages may be used, but keeping messages reasonably small is a desirable aim.

Number of Bulletin Boards in an Area

As a general rule of thumb, for a general mail handling Bulletin Board, each operational port can support up to about 200 casual users, with a lesser number of regular users. If there are less than about 25 regular users, then there is probably insufficient justification for another general BBS. In areas with a high number of users, more than one BBS may be required.

Special purpose BBS should be considered separately. The Service Level of a special purpose BBS should not overlap to any significant extent with that of an existing general purpose BBS. A separate frequency for a special purpose BBS should be chosen where possible.

Reference: 87.09.08
Previous version: 91.10.04/EC
Revised: Oct 91 & Jul 92 Board meeting
Adopted: Oct 92 Board meeting

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the Federal Membership Register during the month of December 1992

L10155	MR B BAKER
L20873	MR R SPAIN
L30830	MR P RICKETTS
L30831	MR D MURRAY
L40338	MR T B BARTHELSON
L40339	MR S R HORN
VK2BRB	MR R L CLOSE
VK2CXC	MR C PRADIER
VK2GVR	MR S A KNOWLES
VK2MMF	MR J DUDLEY
VK2MML	MR J C COWELL
VK2PGA	MR G PAL
VK2TAR	MR S A WATSON
VK2TEN	MR P C BULLIMAN
VK2TLL	MR L ZILLI
VK2VX	MR A H WOOD
VK2WAD	MS W K ANDERSON
VK2WPT	MR P D THOMAS
VK3KGD	MR R S READ
VK3MCT	MR J PINCOCK
VK3MIY	MR H INHOVEN
VK3PUG	MR D WARD
VK4BF	MR R C TULLOCH
VK4JUD	MR K J DUNCANSON
VK4KEL	MR G SANDERS
VK4LMO	MR H R HART
VK4TDE	MR D E FURNESS
VK5KPK	MR J KOBES
VK5NDG	MR G M RIEDE
VK6ARQ	MR P B READ
VK6PCE	MR D N PLANE
VK6YFC	MR M P WALLACE
VK7AX	MR A I BEDELPH

ar

Cosmonaut Manarov visits Melbourne

A fitting culmination to the International year of the satellite.

Compiled by Bill Magnusson VK3JT from a detailed diary and photographs by Peter Ormerod VK3CPO.

Readers may recall that Maggie Iaquinto VK3CFI was recipient of the Ron Wilkinson Achievement Award in February 1992. This was in recognition of her work with the cosmonauts on the Russian Space Station MIR in helping them set up their packet radio station. The PMS on board MIR has gone on to become possibly the most widely known and worked packet radio system ever. In the process Maggie or Margarita (Rita) Ivanovna, as the Russians called her, became firm friends with the succession of crew members on the space station.

Musa Manarov in Melbourne

Imagine her excitement on Nov 28th when a message from Vern WA2LQQ via UoSAT-22 announced that Musa Manarov U2MIR, Maggie's original contact on MIR, the guy with whom she did all that early work, was coming to Melbourne on Nov 30th and had asked if it would be possible to meet her. Maggie went into overdrive. How could all this be organised in such a short time ?

Enter David VK3UR. David is connected with the organisation that sponsored Musa's visit to Melbourne to take part in an international conference on state of the art communications. Musa and two colleagues were to present a demonstration of data store and forward techniques using low cost ground station equipment and small, low earth orbiting satellites not unlike amateur satellites. These systems are of great interest to developing countries and international aid organisations.

Welcoming Committee

David's effort in organising the Russian group's formal professional presentation and their leisure time activities was nothing short of heroic. He probably didn't get much sleep at all during the visit.

Maggie was attending a conference in Melbourne herself that week so we organised for her to stay at my place when she wasn't involved with her meetings. Bearing in mind that Musa and company would be very tired after their long trip, a small "welcoming committee" was hastily assembled. Maggie VK3CFI, David VK3UR, Peter VK3CPO and I met Musa and party, at Tullamarine around midnight on Monday 30th. Musa's colleagues, Mikhail and Slav are communication scientists but not radio amateurs.

The first meeting between Musa and Maggie (Rita) was something to behold. A large sign "MIR/VK3CFI" being waved around wildly to attract Musa's attention. The broad grin of recognition as he came through the customs gate. It was wonderful. They had both obviously looked forward to the moment for so long. They rode to the Sheraton with David, talking excitedly in Russian/English. Musa proved to be a warm fun-loving guy with a wonderful sense of humour. (As well as still holding the world record for the most time spent in space). As expected the guys were pretty tired after their virtual non-stop flight from Moscow. They appreciated the welcome being kept low-key. We ferried them to their hotel and left them to get some rest.

The next few days were filled with furious activity. Despite suffering from jet-lag, they wanted to fit as much as possible into the short time they were to stay in Melbourne.

Tuesday evening saw us all take off for a small Turkish restaurant in Richmond. An unsuccessful attempt to contact MIR from a dingy little upstairs room left the restaurant owner quite perplexed. An early night was dictated by the all important conference presentation by Musa, Mikhail and Slav the next day.

Photographs for Australian Geographic Magazine

Australian Geographic Magazine got wind of the visit and arranged for a photographer to meet us all at the Sheraton on Wednesday evening.

A long photo session captured the occasion to form part of an up-coming article in Australian Geographic which will feature all aspects of the hobby of Amateur Radio. Jim Linton then interviewed Maggie, Musa and Bob VK3ZBB on the Yarra South Bank for the Sunday morning WIA broadcast. Bob took part in Musa's very first amateur radio QSO from the space station on 15th Nov 1988. He subsequently received a QSL card from Musa's QSL manager confirming this historic contact. Musa personally autographed the QSL card for Bob that evening.

Another fruitless attempt to contact MIR caused some anxiety. Would we ever make it ? Although Maggie made a rather noisy voice contact with MIR on her way home, it was still uncertain whether the crew knew that Musa was trying to contact them. Peter VK3CPO made packet contact with the MIR PMS on a subsequent pass late that night and left a quite un-ambiguous message to the effect that Musa was trying for a QSO whilst in Melbourne. Receiver de-sensing on MIR caused by command transmissions on 143.625 MHz and local QRM make it impossible for Musa to do this from his home in Russia.

Success!!

Contact with MIR at last. At 8pm, 3rd December 1992, prior to a most enjoyable evening meal, which Maggie's husband Lou VK3DFI and Jim Linton

VK3PC were able to attend, Musa called (and to every-one's delight), made contact with Anatolij U6MIR on board the Space Station MIR. Peter's 1 watt hand-held transceiver did the trick and Musa used his "Australian" callsign, U2MIR/portable VK3. A spirited conversation followed, appropriately translated by Mikhail for all to hear. What an exciting culmination to the visit.

Peter's photo shows the QSO in progress from near the Yarra South Bank with MIR somewhere low in Melbourne's south-western sky in the back-ground. Only a few nights before the space station had been plainly visible but there was just too much daylight to see it on this occasion. Musa was quite moved by the event and went to some pains to thank Maggie for the wonderful surprise.

Their formal presentation went off smoothly and from all accounts was warmly accepted by the international conference. The visit ended on Saturday 5th December with David once again stepping forward to organise a drive around the bay-side beaches and a visit to the Melbourne Zoo on the way to the airport. On this occasion David was ably assisted by Joe VK3BKI and Gwen VK3DYL. Maggie was unable to attend their farewell but per medium of the Geelong repeater she and Musa conducted their goodbyes when the party arrived at Melbourne Airport.

Musa's very first contact with MIR!, with Maggie Iaquinto VK3CFI.

A memorable week for all concerned. Musa's stories of life on the space station were at once astonishing, hilariously entertaining and very enlightening. My lasting impression is of one incredibly laid-back guy, completely in control and justifiably proud of his own and his country's achievements in space research.

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Amateur Radio and Electromagnetic Compatibility

PART 2

Hans Ruckert VK2AOU
EMC Reporter
[illegible]
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Low-Pass filter

Fig 8 shows the circuit of a low-pass filter which has been used for a long time by many manufacturers and amateurs. The table lists the component values for two filter versions with cut-off frequencies between 32 and 38 MHz. The formulas permit calculating this type of filter for other desired frequencies.

LOW PASS FILTER (CIRCUIT AS IN FIG. 8)
SAMPLE RESULTS FILTER COMPONENTS & FREQUENCIES

		CASE 1	CASE 2	
f_c	MHz	32	35	
f_∞	MHz	45	47	
M		0.7	0.667	
R	Ω	52	52	
L K	µH	0.517	0.473	
L1	µH	0.36	0.315	
L2	µH	0.188	0.197	
CK	pF	191	175	
C2	pF	67	58.3	
f_a	MHz	38.5	41	
f_b	MHz	22.7	24.8	
MHz WITH 100 pF	L1	26.5	27.8	10 mm LONG 7 TURNS 12 mm I.D.
	L2	37	36	15 mm LONG 9 TURNS 8 mm I.D.
PARALLEL	L K	22	23	24 mm LONG 11 TURNS 12 mm I.D.
FOR COIL ADJUSTMENT		0.00		1.0 mm Cu WIRE

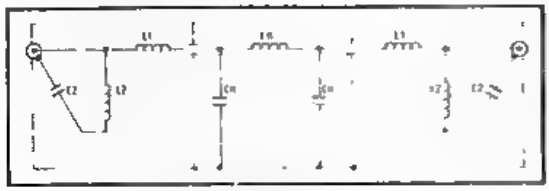
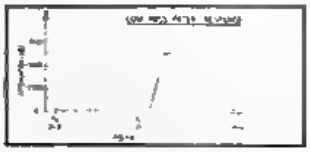
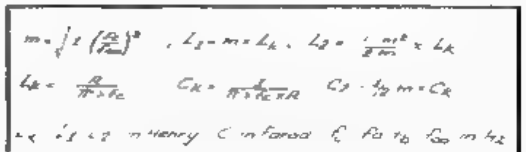
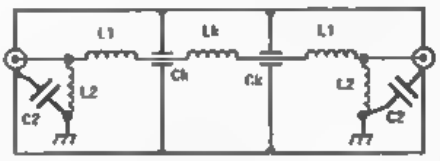


Figure 8a — Low Pass Filter







(Ck are Feedthrough Capacitors)

Figure 8b — Low Pass Filter with Feedthrough Capacitors

It is absolutely necessary that the filter components are in three RF tight compartments, or stray RF will bypass the filter at higher frequencies. It is also absolutely necessary that especially the capacitors CK are of the feedthrough type, so the earthed capacitor electrode

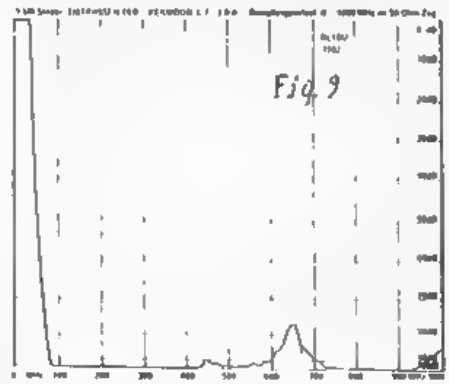


Figure 9 — Refer Text

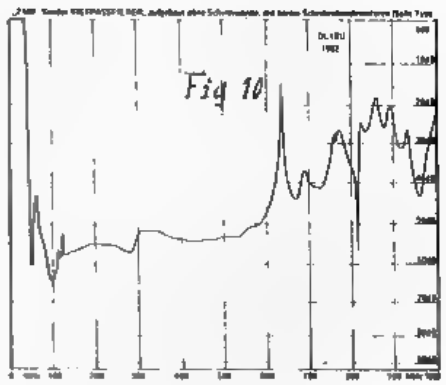


Figure 10 — Refer Text

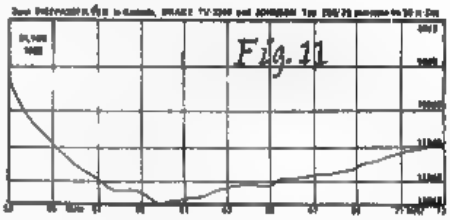


Figure 11 — Refer Text

is directly in contact with the shielding wall. Even a 1 cm = 10 mm long wire lead would have 10 cm inductance = 0.010 µH, which would give a self-resonance frequency near 100 MHz.

Fig 9 shows the response curve of the well designed low-pass filter LF-30A from Kenwood, over the frequency range up to 1000 MHz.

Fig 10 demonstrates what does happen if the separating shielding walls are omitted, and if disc capacitors with wire leads are used.

Fig 11 demonstrates the added attenuation which results if two low-pass filters are connected in cascade (in series), the Drake filter TV-3300 and the Johnson filter Type 250/20, using a 50 ohm load.

Should a particular harmonic be difficult to suppress, one can place across the transmitter output terminal either a series tuned circuit or a coaxial 1/4 wavelength stub. In the first case one can make two small coils from the disc capacitor leads for example. In the second case, one has to consider the velocity factor of the cable used (0.66 for

RG8AU). The open stub can be connected via a T-connector to the amplifier and antenna.

Fig 12 shows a split filter which may not reduce the harmonics at the antenna terminal, as intended and hoped for. In one commercial split filter the high-pass components were not sufficiently shielded from the desired low-frequency power so that the DC meter at the output end of the high-pass filter did not only show the filtered-out unwanted harmonics, but also a substantial amount of wanted low-frequency RF power. D is the diode to rectify the high frequency RF. R is the load resistor, which is hoped to absorb the unwanted high frequency RF harmonic power.

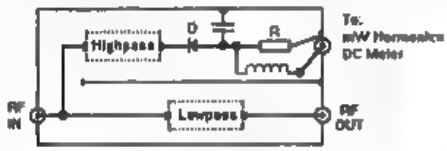


Figure 12 — Split Filter

Fig 13 shows the "Haro" low-pass split filter and the "Schertler (both German firms) high-pass filter response curves. A split-filter would give similar results if the high-pass filter is in a separate shielded compartment. The hi-pass filter must reject as much as possible all traces of the transmitter frequency power below 30 MHz. The DC output signal from the hi-pass filter can be indicated by a mA-meter, which is calibrated in milliwatts. Fig 14 filter photos. For more details see AR November 1987.

The audio frequency ferrite-ring choke with two windings using opposing windings to avoid saturation of the core, can be used to avoid RF radiation from speaker or key cables. The same method with larger low-Q and high-permeability ferrite cores, like TV-line output transformer cores, can be used to suppress leakage going along the mains power cable of transmitters.

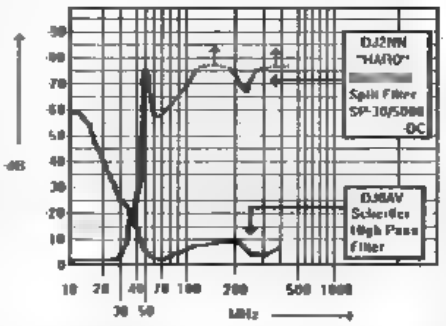


Figure 13 — "Haro" Low Pass Filter and "Schertler" High Pass Filter

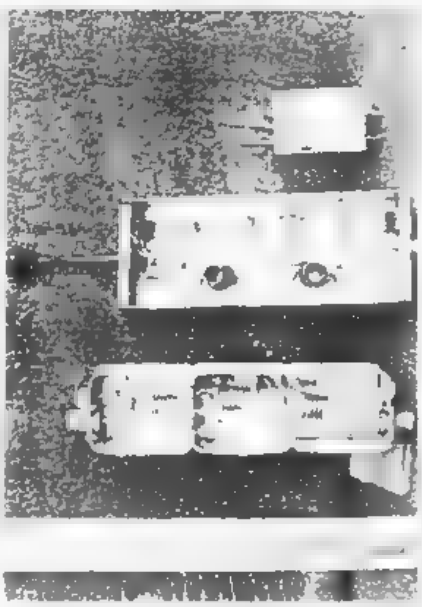


Figure 14 — Refer Text

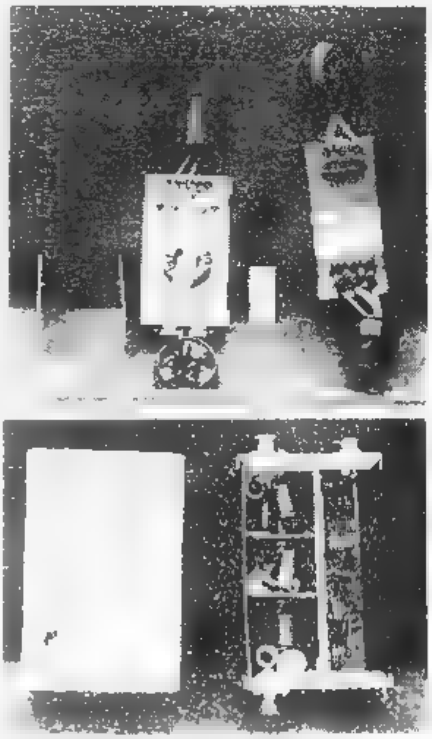


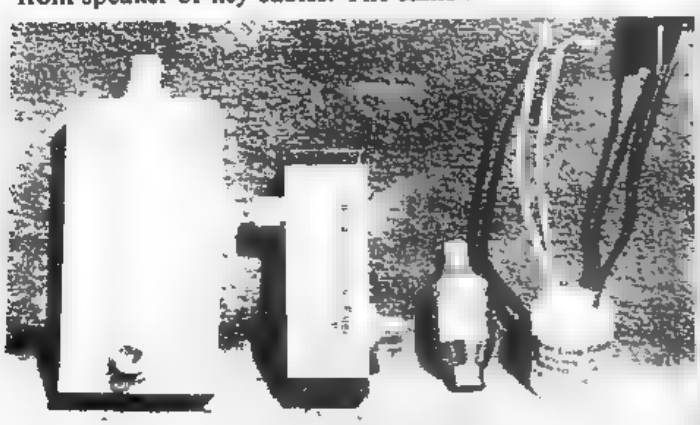
Figure 14 — Refer Text

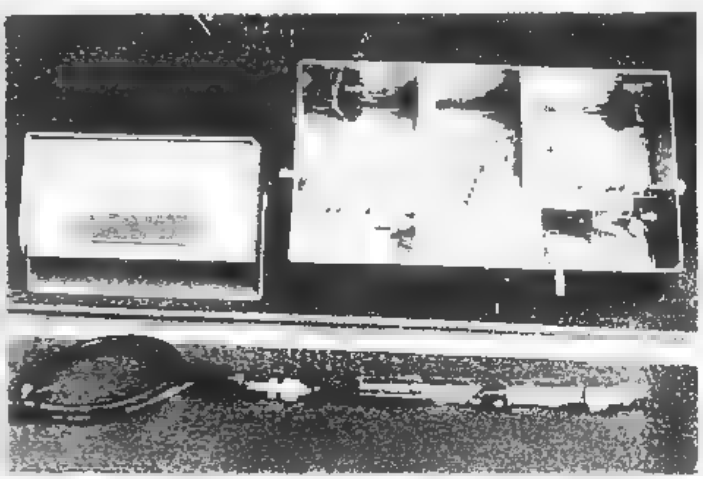
Typical data for a loudspeaker twin coil choke:

Attenuation above 500 kHz 40 dB
DC resistance 50 milliohm (2 x 25)
Max AF power load 125 watt/4 ohm
Size 25 mm diam 30 mm length

No audio distortion has been found. Other RF ferrite core chokes achieved attenuation of 20 to 40 dB over a claimed range of 3 to 500 MHz.

There is not much else we can do with our transmitter. We can try to convince the local council and neighbours the problem would be reduced if we are permitted to use the greatest antenna height we can afford. At one





wavelength height above ground, direct radiated and the ground reflected signal combines, so that the main radiation lobe has an elevation angle of 15 degrees, which is very desirable for long distance communication (21 m for 14 MHz). The unwanted signal is weaker under the transmitter antenna, as much below as possible, than in front of the beam.

What can be done to the TV receiver, hi-fi radio and VCR?

We can demonstrate to our neighbour what can or has to be done to this equipment by showing what we did to our own gear in order to overcome susceptibility problems (lack of selectivity).

Antenna separation transformers

RF front-end overload can occur when the TV feeder picks up too much amateur transmitter energy, perhaps when the feeder is one-half wavelength long (10.6 metres for 14.2 MHz). It can help to connect the TV antenna shielding braid to a water pipe where the pipe comes to the surface. We can insert a TV separation transformer between TV set and feeder. One type consists of two 28 cm long pieces of RG59 cable, formed to make one turn each. Each turn has a plug at one end, whilst the other two ends have the inner conductor soldered to the braid of the same turn. The two cable turns are placed on top of each other and held together by insulating tape. The attenuation is about 20 dB at 10 MHz, but only 5-8 dB at TV frequencies.

The industry uses separation transformers, which use a very small ferrite ring of high Q and low μ with two windings of three turns. This transformer is bridged by a 4 pF disc capacitor to assist the passage of UHF TV signals. This transformer has very small losses of 1-9 dB over the frequency range of 20 to 400 MHz.

High-Pass Filters

The Telefunken (Germany) hi-pass filter (Fig 15) uses series connected capacitors and inductors to ground, like the ARRL hi-pass filter. Two series-tuned circuits are incorporated, which result in 52 dB attenuation at 30 MHz.

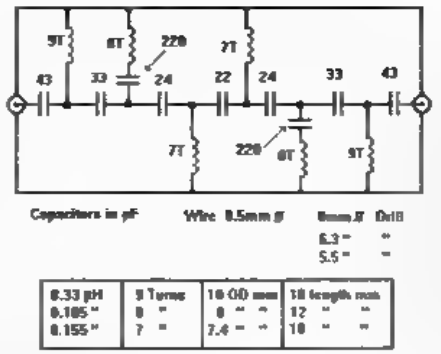


Figure 15 — Telefunken High Pass Filter,
-52 dB at 35 MHz, -1dB at 50 MHz.
Capacitors in pF.

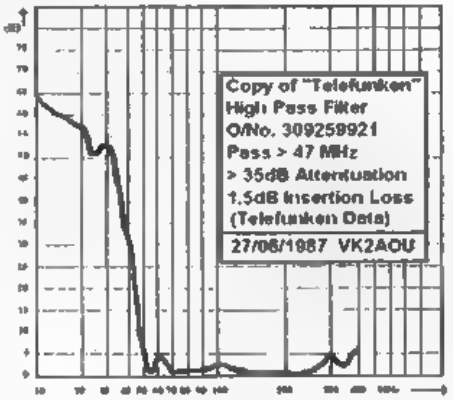


Figure 16 — Graphical performance of Telefunken High Pass Filter

Hi-pass filters seem to be most effective if they are installed (soldered) directly to the cover of the TV tuner, and inserted between the tuner input and the internal TV feeder cable. A filter component layout has to be used, which avoids coupling between the coils and the input and output filter terminal. A separating shield between the filter halves could help, too. Ferrite core chokes can also be most helpful when attached to the cables entering the TV receiver, hi-fi receiver, computer etc. A pair of "C" cores, as used in TV line-frequency transformers, are most suitable for mains line chokes, by winding 10-15 turns of the mains cable around this core. The two halves of this core are helpful when the mains plug is moulded to the cable, making it impossible to wind the cable around a ring-shaped core. A smaller ring shaped core can be used if a choke is to be made with TV feeder cable. The same goes for ferrite chokes which are to be used on hi-fi receivers, VCRs and computers etc.

If the problem occurs only at a particular frequency, one can use either a quarter wavelength coaxial open-end stub or a L-C series tuned circuit, adjusted with a trimmer capacitor, installed at the antenna terminal of the equipment involved. One can expect an attenuation of 30 or more dB. The graph (Fig 17) shows the attenuation curves of two coaxial 1/4 wavelength open stubs. The Belden 9913 low-loss cable offers a high degree of attenuation, as was to be expected, compared with RG8U cable.

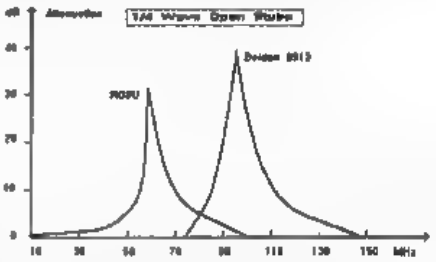


Figure 17 — Attenuation Curves of Two Coaxial 1/4 Wavelength Open Stubs

Fig 18 shows the response curve of a manufactured coax braid breaker transformer which should reject the shortwave band, but offer little attenuation for TV frequencies. This transformer does this very well.

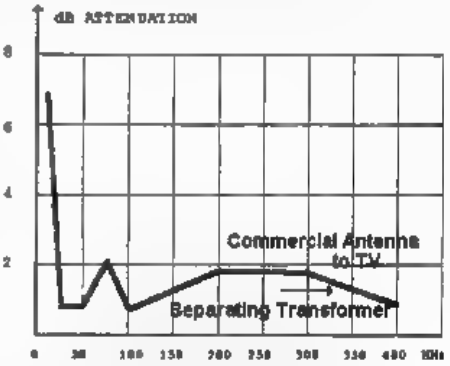


Figure 18 — Response Curve Coax Braid Breaker Transformer

Fig 19. This graph shows two response curves of ferrite core mains line chokes and two curves of ferrite core loudspeaker chokes. All chokes have a useful rejection of the 10 to 80 MHz frequency band, and again at the UHF range for the mains line chokes. The optimistic attenuation of over 40 dB at frequencies above 500 MHz for the loudspeaker choke could not be confirmed. The attenuation of 20-30 dB at short-wave frequencies is useful, but there does not seem to be much attenuation in the VHF and UHF ranges.

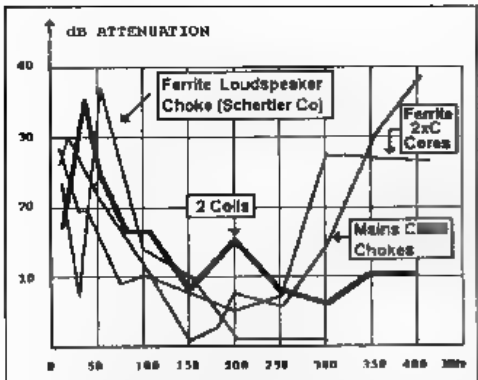


Figure 19 — Two Response Curves of Ferrite Core Main Line Chokes and Two Ferrite Loudspeaker Chokes.

Fig 20 demonstrates the effect of the braid of coaxial cable attenuating especially frequencies above 150 MHz, whilst the RF which goes along the inner conductor of the coax is unaffected. The mains cable choke, wound on a ferrite ring of 60 mm od and 30 mm id having 16 turns, has a useful attenuation from 10 MHz to over 400 MHz of 20-40 dB.

Cases have been experienced whereby moving the TV set to a different location, even in the same room, or by plugging the mains cable into a different power point, that the disturbance was reduced or even eliminated. The overhead power lines and the wiring inside a house can pick up transmitter power and re-radiate it, often producing harmonics into the TV and attached cables. These are the cases where unwanted diodes cause harmonics to appear. Even switched-off TV preamplifiers can do this too, because they contain either diodes or transistors, which act as diodes when the power is switched off. Ferrite core chokes can play a major part in overcoming EMC problems, and they can make the use of low-pass and high-pass filters more effective. Computers and VCRs may in extreme cases require to be placed in a shielding box. Ferrite chokes have to be used where cables enter the box. Especially small radios which have no metal shielding at all, are usually impossible to make less susceptible. Radio inspectors who are called to investigate EMC problems experienced by owners of these radios, tell (in Germany) the customer that nothing can be done in these cases, and that the radio amateur is not to be

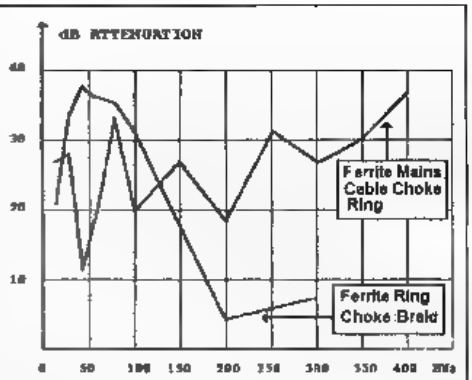


Figure 20 — The Effect of Coax Braid Attenuation

blamed. These receivers would never pass any test-cell measurement. The same goes for unshielded tape recorders.

There are many more special EMC cases which have been described in earlier WIA EMC Reports. We can expect more and new EMC problems, as more and new electronic devices are being introduced. Radio amateurs are not the only electronic communicators who face these problems.

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Pager Interference: Problems and Approaches

Interference to 2m operation originating from pager transmissions immediately above 148 MHz is a rapidly proliferating problem. The WIA has tackled the issue in recent discussions with DOTC. This article outlines the problems raised with DOTC and approaches to how they may be resolved.

Ron Henderson VK1RH
Federal President WIA

THE WIA FIRST had an opportunity to comment upon DOTC Guidelines for the Pager Services back in mid 1991. This was reported in WIANEWS in the November 1991 issue of *Amateur Radio,* and again in WIANEWS in the July 92 issue, where it was advised the WIA was not happy with the apparent lack of attention accorded our first comments.

Two articles on pager interference were also published in the July 1992 and August 1992 issues of *Amateur Radio*. Those articles clearly identified the three differing types of pager interference to the amateur service, namely·

(a) an inopportune combination of site frequencies giving rise to intermodulation product interference;

(b) crossmodulation arising from a strong unwanted signal imposing itself upon a weaker wanted signal; and,

(c) adjacent channel interference arising from excessive transmitter sideband noise or reduced receiver selectivity.

Arising from the WIA's concerns, four key issues regarding pagers were raised with DOTC for resolution. At a September 1992 meeting in Canberra with Spectrum Planning and Policy staff, the first two were clarified and the remainder carried over to a second meeting with Licensing Policy staff in November last year. A recent letter from the Licensing Policy area has now completed outstanding actions on those remaining issues.

Issues

The four issues and the considerations involved are:

(i) Application of the "new standards".

DOTC assured the WIA the *Radiocommunications Assignment and Licensing Instruction (RALI) LM2 — Pager Services,* was the standard for all pagers and where EMC/RFI problems occurred, would be used in resolution of those problems.

(ii) Correction of erroneous filter statements in the guidelines.

DOTC advised the statement in dispute applied to receiver intermodulation problems and not to transmitter

sideband noise. DOTC agreed a notch filter in the pager transmission path tuned to an amateur frequency, would reduce pager sideband emissions on that adjacent amateur service.

(iii) On-site support by DRIs.

On this matter, DOTC took note of the WIA's points, which were principally concerned with pager transmitter sideband noise interference to amateurs, and said they would need to consult with Regulatory staff before giving a definitive answer.

A subsequent letter, dated 1 December 1992, stated in part "..able to confirm that the Department's Regulatory staff will endeavour, to the extent possible, to provide equitable treatment to all licensed services whether they be paging, amateur or whatever." It further emphasised the expectation parties would negotiate problems "..and the Department would lend its support to any equitable outcome that conformed with the rules prevailing at the time."

In addition, the letter also addressed the matter of filters for sideband noise reduction and sought to explore with the WIA an in-principle agreement with the major paging service providers for the provision of notch filters in pager transmitter outputs, at the amateurs" expense, should the necessity arise in the future.

The implication here is for a negotiated solution where both the pager transmitter and a co-sited amateur repeater both meet their specification requirements, yet pager sideband noise interference persists. This proposal mirrors the WIA's initial submission on pagers in mid-1991. Naturally, being an in-principle decision, binding upon the whole WIA, it will need to go to the Federal Board for consideration.

(iv) Consideration to existing occupants and users when resolving compatibility problems on sites.

DOTC confirmed their frequency assignment and compatibility assessment procedures are based on the concepts of providing equitable spectrum access and treatment, consistent with the exercise of a duty of reasonable care, to all spectrum users. They were able to confirm that pre-existing licensed installations are taken into ac count in the assignment process. However, they did advise there may be need to negotiate sometimes, for frequency assignments were dynamic, rather than fixed forever.

DOTC provided a copy of draft RALI Endorsed Assignment Models, Software and Procedures.

Resolution of problems

The draft RALI mentioned above supplements the technical requirements of the specific RALI on pagers as to the problems with assignments. The implications from them for pager-amateur interference situations appear to be as follows:

(a) If a site intermodulation product interference situation arises, often called third and fifth order intermods, DOTC should be asked to check the assignment using either of the approved computer models CHANEL (V3.0) or LYNX and recommend an appropriate solution.

(b) If crossmodulation arises, the RALI *Adjacent Service Compatibility Criteria,* which sets permissible frequency- separation distances, should be checked by DOTC.

(c) If pager sideband noise interferes with the co-sited amateur repeater and both the pager and the repeater are operating within specification, a notch filter, inserted in the pager transmitter output and tuned to the repeater receiver frequency, should be trialled by the District Radio Inspector (DRI). If this removes the interference, the WIA recommends the repeater licensees have a commercial filter fitted at their expense to maintain good relations and restore use of the repeater. It is emphasised the pager operator is under no obligation to take any action.

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Random Radiators

Ron Cook VK3AFW
Ron Fisher, VK3OM

The AR Single Coil "Z" Match

Since we published our description of the 'Rononymous' "Z" Match in Random Radiators in the March 1990 issue of Amateur Radio, many of these units have been constructed with quite a bit of success. It seems that our message about the advantages of using a balanced line feed system to a centre fed antenna is really getting through. Without doubt, this is still one of the best approaches to the construction of an all-band antenna.

However, one of the practical problems in building the "Z" Match is the construction of the two coil sets. We believe many amateurs were discouraged from building the "Z" Match because of this. Well, help is at hand, read on for details on how to construct the new AR single coil "Z" Match.

Firstly, a bit of history. The idea of the single coil "Z" Match was first suggested in the New Zealand amateur magazine, "Break-In" for March 1992 by TJ Seed ZL3QQ. The article was more of a theoretical and mathematical run-down on how the thing should work. There was very little practical information on just how one should go about building one. Well, we decided to take up the challenge, get one up and working, and compare its performance with the standard "Z" Match.

So far our resident constructor has built up three versions and all produced very satisfactory results. All of the prototypes were passed on to Lloyd Butler VK5BR for his thoughts and suggestions and so the final model was constructed Even this one is open to some slight changes which we will cover later in this article. According to Lloyd, the single coil "Z" Match is easy to get working on 160 metres, and this should interest many amateurs Lloyd will present this information along with his complete findings on the single coil "Z" Match in the near future.

In the meantime, we will give you

details on the construction of a coil that will enable the "Z" Match to cover a range of 160 metres to about 15 metres, an option we think might prove popular. In its normal configuration, our "Z" Match is designed to cover the full range between 3.5 and 30MHz. Its operation is by no means confined to the amateur bands, and it's a very handy feature to be able to tune up on all frequencies for excellent short wave listening.

Another bit of history that turned up while we were investigating the single coil "Z" Match, was an article which appeared in AR for Oct 1953 by the late Joe Rogers VK3TO. This described an all band tank circuit for transmitters which bears a striking resemblance to our single coil "Z" Match. It is, of course, designed to couple a high impedance valve final amplifier to a low impedance output circuit. Not quite the same as an ATU which must transform a wide variety of impedances to the 50 ohm output of a transceiver. Nevertheless, it demonstrates the old saying that nothing is new under the sun.

As shown in the circuit of the ZL3QQ ATU, the 50 ohm output was taken from the top of the coil. Our experiments show that this is definitely not the right place, and that a much better matching range can be achieved by tapping the output well down the coil.

One of the big advantages of the single coil "Z" Match is that there is only one output link. The old one had two and this required switching. We now have two controls only to cover the full range from 3.5 to 30MHz.

The output coupling coil also plays an important part in the range of impedances that can be matched. The single coil "Z" Match shown in the illustrations is in fact an early version with the coupling coil wound directly over the earthy end of the main coil. After the photos were taken, we discovered better results could be had by winding the output link on to a short section of plastic pipe which was slipped over the earthy end of the main coil. The earlier version will work well, but with a slightly limited matching range.

Putting it all together.

If you are still with us up to this point, you might be prepared to go ahead with construction. It's a good weekend project and you will finish up with a better ATU than many commercial units costing two or three hundred dollars. You will need the following components: one two-gang variable capacitor with a maximum capacitance of about 350pF. For use with a standard HF transceiver of about 100 watts output, a 1950s style broadcast tuning capacitor is ideal.

You can often pick these up for a couple of dollars at a radio club buy and sell day. If you intend to run the full 400 watts then you will need a capacitor with wider plate spacing, designed for transmitting. These are not quite as easy to get hold of, but, given time, we are sure you will track one down.

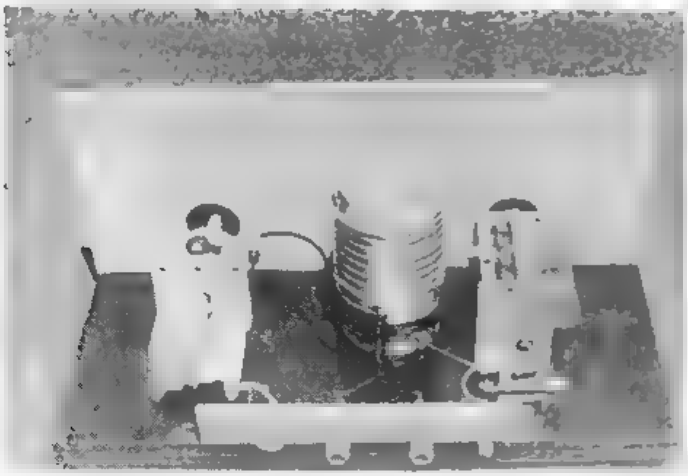
Next, one single gang capacitor with a maximum capacity of about 350pF. Again, a single gang broadcast type of about 350pF is fine. The one shown in the illustration is an English Eddystone capacitor with 250pF maximum capacity

The coil is wound on a scrap piece of plastic water pipe. This has an inside diameter of 50mm and an outside diameter of 53mm. Your friendly local plumber should be able to supply you with more than enough to do the job from his rubbish tin.

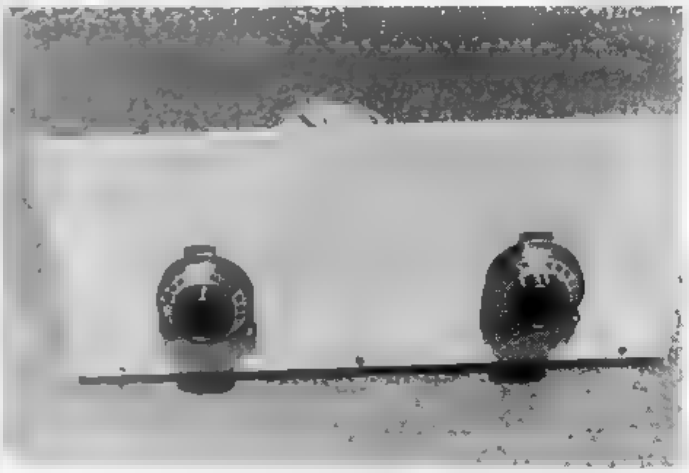
If you elect to wind the output coupling coil on a separate former you will need another piece of plastic water pipe with an inside diameter of about 60-65mm. You will need 100mm length for the main coil and about 55mm length for the coupling coil.

The coils are wound with 14-18 swg tinned copper wire. The heavier wire will give better overall efficiency, but the lighter wire is easier to wind. You will need about four metres of wire to do the job. Our prototypes were built on a wooden baseboard with a masonite front panel. However, if you can run to it, a metal cabinet is recommended. Under some conditions you might get a slight "hand capacity" effect with the wooden construction.

Again, we recommend the use of vernier drives for the tuning capacitor and the Dick Smith H-3900 are ideal. Three terminals and an SO-239 coax connector complete the inventory.



The works of the "AR" Single Coil "Z" Match. Tuning capacitor on the right and loading capacitor is the left. Note the output coupling coil wound over the bottom of the main coil. See text for comments on this.



Front panel view of the "AR" Single Coil "Z" Match.

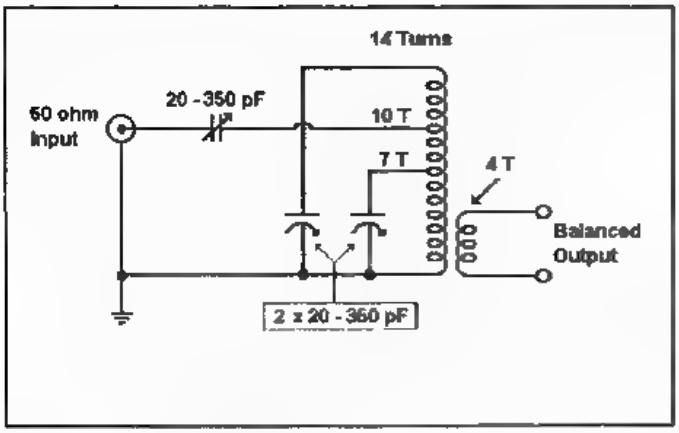


Fig 1 — The "AR" Single Coil "Z" Match.

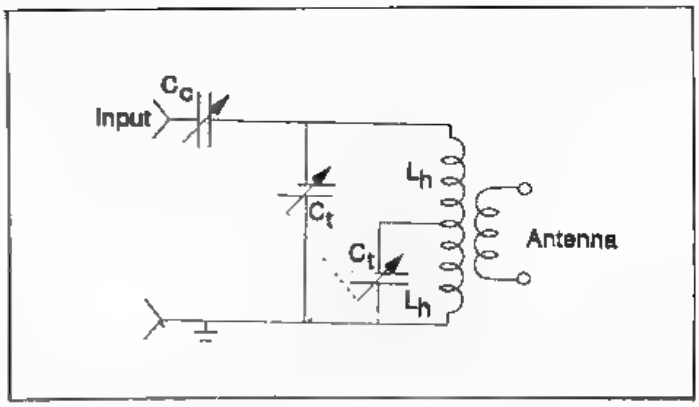


Fig 2 — The Single Coil "Z" Match as described in NZART Break-In, March 1992.

Winding the coil

The main coil requires 14 turns spaced over 80mm. Winding these on to the plastic water pipe is not as easy as it looks, and we suggest the following method:

Firstly wind your coil on to a smaller former, say about 40mm in diameter. When you remove it from this, it will spring out to about the required diameter. Secure the top and bottom of the winding through holes drilled through the former and then run some Araldite (TM) down the winding in a couple of places to hold the wire in place. We also cut a slot in the former about 50mm long and 10mm wide to facilitate the connection of the two taps. Unless you want to experiment with different tapping points, we suggest you leave this out.

General construction points

Layout of the single coil "Z" Match is quite straightforward and no particular precautions are needed except to keep the connections between the coil and the two gang capacitor as short as practical. While the unit will be earthed via the coax to the transceiver, we recommend a separate earth connection to your usual station earth point. This is more important if you are using the ATU to feed a single wire antenna such as the W3EDP we described several months ago.

To feed either a single wire antenna or coax-fed antenna, just ground one of the antenna terminals and make your antenna connection to the other.

Again we recommend a metal cabinet or, if you cannot run to this, a metal panel would be a good idea. This, of course, should be connected back to the earth terminal.

Tuning up and general operation

Using the AR Single Coil "Z" Match with an extended double Zepp for 40 metres, tuning was very smooth and easy on all bands from 80 to 10 metres, including the WARC bands. For receive only, it also peaked up nicely on all of the shortwave broadcast bands. For use with a transmitter or transceiver, you will need a reliable SWR meter, and, if you are really keen, you might want to build one into the ATU itself.

Compared with the old two coil "Z" Match we noted very little difference in performance, however, we will leave the technicalities to Lloyd Butler when he presents his full technical review of the new single coil "Z" Match.

We think that overall it has some significant advantages over the old standard "Z" Match. The most important is the ease of construction; secondly, easier operation, because the output coupling does not require switching.

Build one up; we know you will be delighted. So it's goodbye from him and goodbye from me.

The Two Rons

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Equipment Review

ICOM IC-R7100 VHF-UHF Receiver

Paul McMahon VK3DIP,
47 Park Avenue,
Wattle Glen 3096

The IC-R7100 is a wide band (25-1999.9999 MHz), multi-mode (AM, FM, SSB), receiver with scanning ability. Price Class AUD2000. The review set had serial number 01078.

First Impressions

The receiver comes in typical cardboard/foam packaging which can be retained for re-use as a transportation carrier. Included in the package are both 13.8V and mains power cords, Instruction Manual, Schematic Diagram, and a bag of miscellaneous bits including 4 x 3.5mm earphone plugs, 2 RCA plugs, 6 fuses, and a number of screws. Unfortunately the review set was missing the DC power cord, and schematic, however this is undoubtedly due more to "path losses" as the set made its way to me, rather than any problem at ICOM.

The set, in size and shape resembles a modern "mobile" HF box, but without the heat sink sticking out the back. A single large tuning knob, reasonable size S-meter and typical multi-function frequency/mode etc readout dominate the front panel. Two other knobs for volume, squelch, and innumerable buttons fill out all remaining space.

The S-meter is a standard analogue type with markings at S0-9, 20, 40, and 60 dB. All controls are well spaced out and easy to use, with only a minimum of buttons having more than one function. The manual (A4 size with no small print) is some forty pages and describes in easy stages what each button is, how to connect power, and antenna, etc. It also contains a large warning about the privacy of radio communications.

The back panel in contrast is virtually empty. It sports a single "N" type socket for antenna connection, AC (IEA) and DC (as for IC22S) power sockets, four 3.5 mm phono sockets for such things as computer control, tape recorder, external speaker etc. There are two RCA sockets for the optional TV R7100 which allows Video and Stereo FM broadcast reception. The TV-R7100 option was not available for test.

Initial set up was quick and painless, and basic operation was relatively straightforward. Put in a frequency via the keypad, press enter, select a mode and there it was. The main dial also could be used. I would be interested to know how many people (as did I) when trying to think of frequencies to try, come up with commercial FM broadcast ones

Audio quality was good with plenty of volume available. It would take a brave person to advance the volume control past half way when listening to a broadcast FM station, the built-in speaker not quite being of "ghetto blaster" calibre While on the subject of the audio one thing noticed at this stage was the confirmation beep, ie every time a button is pressed etc a beep is heard. Be careful, this obviously comes through the normal audio path including volume control. If you have been listening to a quiet station with the volume turned up, it can give you a bit of a start when this now very loud beep comes up when you press a button. The manual details how you can turn the beep off, or adjust its level (internal adjustment). In the review receiver this level was set a bit too high for my liking.

Technical Bits

An extract from the specifications for this receiver are given at the end of this review. As can be seen these are quite good; the frequency coverage is very wide and all modes (save an explicit CW one) are available with varying bandwidths. While no information is given on inter-modulation etc no particular problems were experienced in this area.

In terms of sensitivity and selectivity the receiver is on a par with, or better than, most equipment in current use. It is possible to find some equipment with marginally better specifications but they are not all that common. The true test of course would be in terms of dynamic range, image rejection, and inter mod and unfortunately these figures are not provided with the set. Also unfortunately the requi site test equipment to get accurate answers in these areas was not available to me, likewise the time available for this side of the review was, for various reasons, quite short.

On all my subjective tests however, and on those of others who own this set, the receiver performed very well.

As a fox hunter, some items that are of particular interest to me are the accuracy of the S meter and the intrin-

sic shielding and effectiveness of the attenuator. In my tests the S-meter was about average, ie the numbers are only to serve as a guide. There was about 20 dB between 40 and 60 dB over, however there was only about 10 dB from S9 to the 20 dB mark. This appeared to be consistent across the frequency range, as was the effect of the built-in 20 dB attenuator, though this was difficult for me to test properly above 1 GHz. The shielding also appears to be on a par or better than many other rigs. Two watts from a hand held one metre away, with the receiver terminated with a 50 ohm load produced only an S9 signal. In this test the attenuator had little effect.

An area of interest for a receiver with such a wide range is the possible presence of spurious responses or "birdies". It would be all but impossible to have such a good receiver without some problem of the receiver hearing itself. The ultimate test for this is easily set up, but is a problem in itself.

The receiver is terminated with a shielded 50 ohm load and scanning is set for the smallest step (ie 100 Hz) and off we go. The problem is that this is a very wide band receiver. There are some 19,750,000 frequencies to test. Even with the highest scan speed which was capable of a very sprightly 125 steps a second this amounts to 158,000 seconds, or nearly 44 hours from top to bottom. On a slower scan speed this could easily stretch to over a month, not something to be lightly contemplated! It is only figures like this that give you an idea of just how much spectrum this box covers.

After some effort I did manage to find at least one harmonic. Without a circuit it is impossible to be sure, however I am pretty certain that there is a 10.240 MHz oscillator in the box somewhere. This is evidenced by quite small spurs every 10.240 MHz with the first visible at 20.480 MHz, and some 190 odd others all the way up to 2 GHz. All are at a very low level. You probably wouldn't notice them unless you were looking for them, except for the one at 512 MHz which for some reason was S9 on the meter. 512 MHz is also the place where the first IF changes from high side to low side so perhaps this has something to do with it. There may well be others there but I didn't find them. On the whole this set represents a very impressive bit of receiver design.

Operation

The operation of the rig is straightforward from the instruction manual, however some time should be taken in examining the various scanning options. Scanning is the single largest chapter in the manual, by a large margin. Scanning options include 5 basic scan types with a large number of variations using combinations. The 5 basic types are:

- Programmed scan, ie set from and to.
- Memory scan, ie scan memories.
- Selected Mode Memory scan, ie scan memories that have the same mode.
- Auto Memory Write scan, ie as a frequency is found write it to memory.
- Window Scan, ie hop between the two windows.

The Auto Memory Write is a neat feature. Memories 800-899 are available to be automatically written to as active frequencies are found. These can then be reviewed at leisure. Considering the sorts of times mentioned before this is the only practical way to scan large chunks of spectrum.

The set has 900 memories. Each memory stores frequency, mode, tuning step, and select number or skip channel. The select number is a way of tagging memories with a particular number which can be used in conjunction with the scan, ie groups of memories can be scanned. The skip channel for memories 700-799 can be used to specify frequencies which are to be skipped in a scan.

As well as these scanning functions the set also has a clock and timer ability to enable unattended operation at particular times. Also the set has two so called windows which allow such things as having a scan active in the background window, while doing something else in the foreground. Again the manual explains all, however there is probably no substitute for time spent at the controls.

Operation of the controls is basically straightforward, with the only thing I found a bit tricky being the use of the main tuning knob in conjunction with some of the buttons. For example, changing of memory channels is done by holding down the MCH button while rotating the main tuning dial. The squelch control is particularly simple having a combined, noise and level action. The first 25% of its travel affects a noise squelch level, while the rest affects a signal level squelch.

The FM centre indicators and AFC are novel and useful additions. The FM centre indicator performs a similar function to a centre discriminator meter showing whether tuning is above or below the centre frequency. The AFC action is quite interesting to watch, the frequency can be seen to change by itself as the set tries to lock in on a signal. Sideband tuning with only 100 Hz steps and no RIT takes a bit of getting used to but does produce acceptable results in the end.

One feature, that I didn't have enough time with in order to judge its effectiveness, was the voice squelch system. This system is intended to be used in conjunction with scanning, allowing the radio to move on if no

The versatile ICOM IC-R7100 VHF/UHF All-mode Communications Receiver.

modulation is found on a particular frequency even if a carrier opens the mute. Likewise I didn't have a chance to try out the computer control features, however I will say that if you do intend to use this feature I hope your computer is a lot quieter on the air waves than mine, because I can guarantee you that this rig will find your computer on lots of strange frequencies.

Conclusion

This is a very good radio, and ideal for the exploring of the vast spaces out there between the ham bands a la Star Trek. If you do happen to want to use this rig or similar in this manner I would however recommend that you also invest in one of the many frequency listings available, or even just a spectrum allocation chart such as the one that used to be available from DOTC.

Even as just a Ham Bands set this receiver would have much to recommend it.

Rumour has it that in the US this radio is hard to come by because a particular US Government agency has purchased several thousand of them. Which is probably about the only way I would ever get to own one, ie as government surplus. Oh well, one can dream! While on the subject of dreaming there are a couple of ideas that I have had for this and similar rigs.

Firstly the predecessor to this radio (the IC-R7000) had an infra-red remote control. The IC-7100 does not. I think this would have been nice to have in this model too. Perhaps this is just microphone envy on a receiver, however something with just up and down buttons or a keypad would be a help.

Secondly, and I should say in common with most radios these days the serial number on the back of the rig doesn't really help as an anti-theft measure. Being on a small plate held on with two small screws it is no deterrent at all. Perhaps it is time that ICOM et al put in features similar to those found on some car cassette radios.

I for one wouldn't mind having to enter say some 8 digit number every time I powered up the rig, if it meant that if someone was to steal it, that the radio would not function until the secret number I had set was used. Likewise electronically personalising the radio with my call, or driver's licence number locked with this password, would do much more for the resale value than engraving the new $2000 rig with a vibro-etcher. It is not as if there was a shortage of room in the microcontrollers on the rigs these days. You may have heard of one rig that has, as well as its normal features, a special games mode for a space invaders style game on the multi-function display. I for one would rather have the security features than a game.

IC-R7100 Specifications [Abridged]

Frequency Range: 25 — 1999.9999 MHz (Specs Guaranteed 25 — 1000 MHz and 1240 — 1300 MHz)

Frequency Steps: 1 MHz, 100, 25, 20, 12.5, 10, 5, 1, 0.1 kHz.

Antenna Impedance: 50 ohms Unbalanced.

Power: Built in Mains 100, 117, 240 VAC , or external 13.8 VDC.

Current Drain (13.8 VDC) : Squelched 1.5A , Max Audio 1.9A

Audio Output: 〉2.0W

Modes	USB	LSB	AM Normal	AM Wide	FM Narrow	FM Normal	FM Wide
Selectivity (kHz at -6dB)	〉2.4	〉2.4	〉6	〉15	〉6	〉15	〉150
Sensitivity (μV for 10dB S/N or 12 dB SINAD*)	〈0.2	〈0.2	〈1.6	〈1.6	〈0.35	〈0.35	〈1.0
IF(MHz)	25-512		512-1025		〉1025*		
1st(MHz)	778.700		266.700		25-1025		
2nd(MHz)	10.700		10.700		778.7 or 266.7		
3rd Not for WFM(MHz)	455 kHz		455 kHz		10.7		
4th Not for WFM	-		-		455 kHz.		

* A Crystal Converter system is used above 1025 MHz.

Dimensions: 241(W) x 94(H) x 239(D)

Weight: 6.0 Kg

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Technical Abstracts

[redacted]

Interference Reduction

A noise reduction system which allows noise or interference to be cancelled out or nulled has been described in Rad Comm April 1992 and September 1992 issues. The author Trevor Day G3ZYY provided details for use on both 2 and 6 metres as well as for the 4 metre UK band.

The idea is not new but the unit is neat and simple to build and is capable of good performance. The components are all either available locally or suitable equivalents can be purchased locally.

The idea surfaced many years ago as the "Jones Noise Balancing Circuit" in the Radio Handbook. Since then Drew Diamond VK3XU has published a design in AR Oct 1976 and Lloyd Butler has published a design for HF in AR Sept 1992, with a further article as recently as the January 1993 issue. Seems a good idea goes on and on.

The block diagram is shown in Fig 1. The unit has preamps for both the

main antenna and the noise or sense antenna. The noise path has variable phase delay lines of miniature coaxial cable which are adjustable with switches. The coaxial cable used type RG174 is available from a number of sources. Alternatively small diameter teflon coaxial cable is widely available. The gain of both paths is adjustable with one being preset and the other varied to achieve a null.

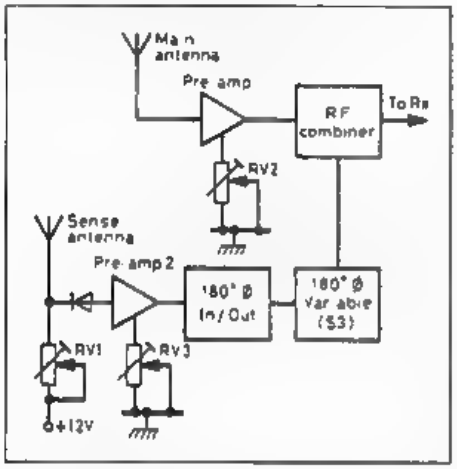


Fig 1 The two signal paths are combined via a phase-shift network.

Adjustment of these types of noise reducer is a multi knob affair as both phase and amplitude must be varied to achieve a null. They are useable for noises such as computer hash and power line noise or desense from a strong local signal.

The circuit diagram is shown in Fig 2. This circuit is of the 2 metre model. For 6 metres connect the sense antenna direct to VC3 and dispense with C6,R6,RV1,& D3. Values for both 6 and 2 metres are given in Table 1. For 6 metres use Fig 3 for the preamp drain circuits. The FETs used may be strange but any low noise MOSFET should do the trick. Types to consider would include 40673, BF981 etc as all that is needed is a low noise preamp for the band. Alternatively a pair of kit preamps could be used.

The variable phase delay switch and PCB layout is shown in Fig 4. The coaxial cable phase delay section lengths are given for both bands in Ta-

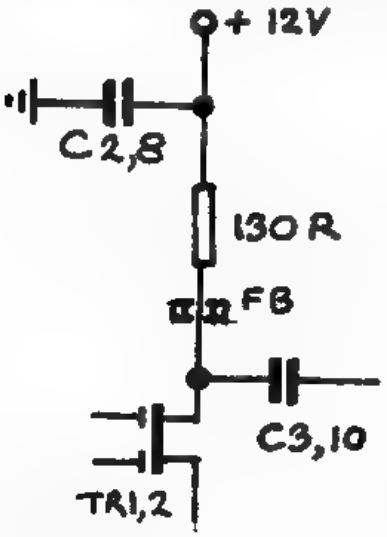


Fig 3 Six metre drain circuits of MOSFET preamps.

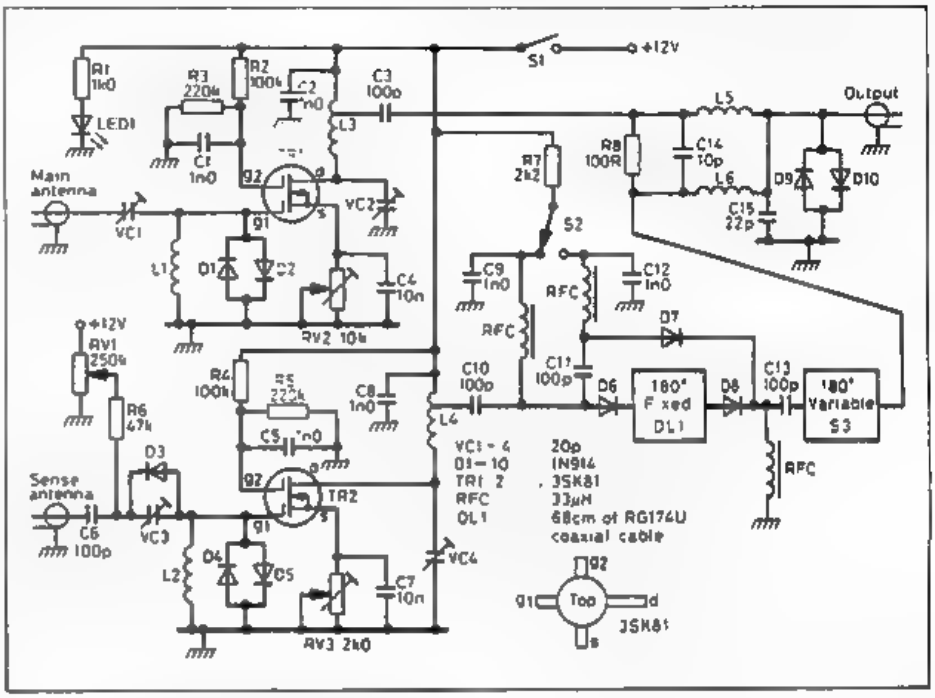
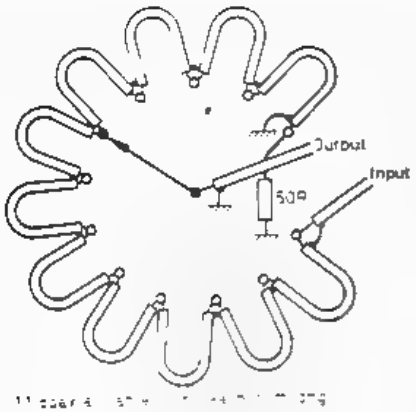


Fig 2 Circuit diagram shows how signals from the two antennas are amplified in a variable gain MOSFET configuration.

Table 1

Component	2 Metres	6 Metres
L1	8T 18 SWG 4.5mm ID	10T 22 SWG 4.0mm slugged Former 13mm long Iron Dust Core
L2	8T 18 SWG 4.5mm ID	10T 22 SWG 4.0mm slugged Former 13mm long Iron Dust Core
L3	8T 18 SWG 4.5mm ID 13mm long Tap 1T	Not Used see Fig 3
L4	8T 18 SWG 4.5mm ID 13mm long Tap 1T	Not Used see Fig 3
L5	8T 18 SWG 6.5mm ID 19mm long	8T 22 SWG Air Core Self Supp.
L6	8T 18 SWG 6.5mm ID 19mm long	8T 22 SWG Air Core Self Supp.
	18 SWG is 1.2mm approx	22SWG is .7mm approx
C3	100 pF	270 pF
C10	100 pF	270 pF
C14	10 pF	33 pF
C15	22 pF	64 pF
C6	100 pF	Not Used
D3	1N914	Not Used
R6	47K	Not Used
RV1	250K pot	Not Used
DL1	68 cm RG174	198 cm RG174
DL var S3	11 x 6 cm RG174	11 x 18 cm RG174
VC1 & VC3	20 pF trimmers	20 pF trimmers
VC2 & VC4	20 pF trimmers	not used see Fig 3



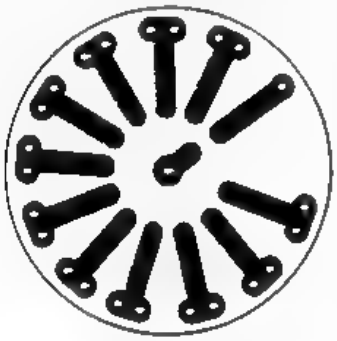


Fig 4 Coarse adjustment of phase uses a 12 way switch fitted on a double sided PCB carrier. Easier with a PCB mount switch.

ble 1. The PCB could be home etched and a Dalo pen would be adequate to mark it up. Suitable switches are locally available.

Setting up consists of tuning both preamps. Then set the main antenna preamp gain for a suitable signal level. The gain of the noise preamp is varied to assist nulling. Nulling is done by adjusting the phase controls and the noise preamp gain to achieve a noise null.

Both signal paths should be shielded from each other. Stray coupling may prevent a null. The original used PCB shields with the whole unit housed in a die cast box.

Transmit receive switching is up to you. It could be incorporated in the switching of an outboard Linear Amplifier. PTT can usually be found on an accessory connector on most radios. Alternatively try tapping it off from a mic plug and socket adaptor arrangement.

The separate noise antenna should be outside and oriented to receive a good noise signal. Some separation from the main antenna is desirable.

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Murphy's Corner

December 1992
RD Contest results — alterations

VK1
VHF Phone
VK1DI 211

VK5
HF Phone
VK5MD 124
VHF Phone
VK5KX 31
VK5MX 53
VK5BKC should read VK5BRC

VK6
VK6VSD should read VK6VS

Final Scores
VK1 51/246 should be 51/426

Late Entries

The rules state that summary sheets must reach RDCC by Friday 2nd October 1992. The following summaries were received after the closing date, and regretfully were unable to be included in the final compilation.
VK2CN, VK2SRM, VK3ADW, VK3AFW, VK3BYA, VK3GHA, VK3KAV, VK3TJA, VK3ZUG, VK4YZ, VK5PF, VK6ATZ.

To assist with the publishing of the results in the November issue of AR, for the 1993 contest it is proposed the closing date for the submission of Summary Sheets be three (3) weeks after the contest. This should not cause any problems, as a summary sheet and not a log is all that is required for this contest.

73 from Neil Penfold VK6NE

★ ★ ★

December 1992, and January 1993
10 GHz Record

Page 28, 10 Gigahertz Record Broken, the correct callsign of Max Chadwick in the photograph is VK3WOD, not VK3WAD. While we are about it, in the January 1993 issue, Murph started the new year well. On page 9, the photo caption of VK3BBU should have read Mal Crew. Apologies to Max and Mal (is that ever confusing !!)

★ ★ ★

January 1993
Info on Rotators

We apologise to Lindsay Collins VK5GZ whose name and call-sign were omitted from the heading of his article on page 21.

★ ★ ★

January 1993
More on Interference Cancelling and a New Circuit.

More apologies to Lloyd Butler VK5BR. Through no fault of his own, Lloyd has become a regular contributor to this section. In figure 2 on page 20, in his circuit diagram R4 the source resistor of the MPF102 (V1) should show as 1000 ohms (1K), NOT 100K. Also the antenna transformer should be labelled T1.

VK3UV
AR Production Editor

ar

Tuned Feeders — Who Uses Them?

Robert R McGregor VK3XZ
[illegible]

EXAMINE THE PRESENT scene. Any antenna system where there is some form of reactive matching including autotune systems between the transmitter output and a feeder system is a tuned one whether coax or parallel lines. A pair of parallel lines matched to the antenna is an untuned system. The use of a tuned circuit as a coupling medium is not tuning the antenna. Ask anyone who has used a correctly set up single wire-fed Windom. Solid coax is the most expensive and inefficient method of coupling to an antenna. It has low tolerance for standing waves. It is very convenient in many situations. Enjoy the free choice that is such a stimulating part of amateur radio.

The full benefit of using an antenna with tuned feeders is not always recognised. The whole system is resonant at one frequency, and all the standing waves are in their correct positions. The ones on the feeders are balanced for minimum radiation and those on the radiation portion of the antenna to provide maximum signals in and out. The low losses of open wire feeders ensure maximum Q for the system, and there is less signal spread or out-of-band pick-up. If inductive coupling is used to the transmitter there is an additional reduction in harmonic radiation.

In general series tuning is easier and there is less RF voltage in the shack. Additional lengths of line can be added in series to shift the nodes — you are in control. It is not essential to have a condenser in each line as the series tuning/coupling coil can be split and a single condenser connected in series at this point. Both plates are hot. A broadcast two gang can be used as a single section, two in parallel or with the sections n series — this will usually cover from 10 to 160 Mx. Always put a drain resistor from each feeder to ground, 100 K is fine, 3 x 33 K 1/2 W in series. For earthing use a simple earthing stick. A wire hook on a stick with a lead to ground hung from a loop soldered or twisted on the feeder.

The coax output socket is connected via a short jumper to the SWR meter, and another is terminated in a coupling coil to suit the antenna tuning coil. You adjust size and turns to suit. This coupling coil can be fixed in position and terminated in a socket for simpler coil or antenna changes. On 80 and 160, a judicious selection of the feeder length can provide part of the series inductance to tune the system. Should there be a pair of roller inductances in the junk box, place one in series with each feeder and dispense with the condenser.

Marconi and fellow experimenters discovered the benefits of tuning the antenna. Telefunken showed that loose coupling gave a cleaner and more readable signal. It was mandatory for years that the transmitter was not direct coupled to the antenna. I wonder if that ruling still exists?

ar

Try This

Info on Pulley

Lindsay Collins VK5QZ
[illegible] Park Avenue
Rosslyn Park SA 5072

A HANDY DROP-IN pulley for top of rotator pipe to assist lifting, holding in rough position while one man bolts the boom to the mast. I have even used it to drop one side at a time of the driven element of the TH6DXX, for alteration to its lengths.

The rope is manhandled from the ground.

ar

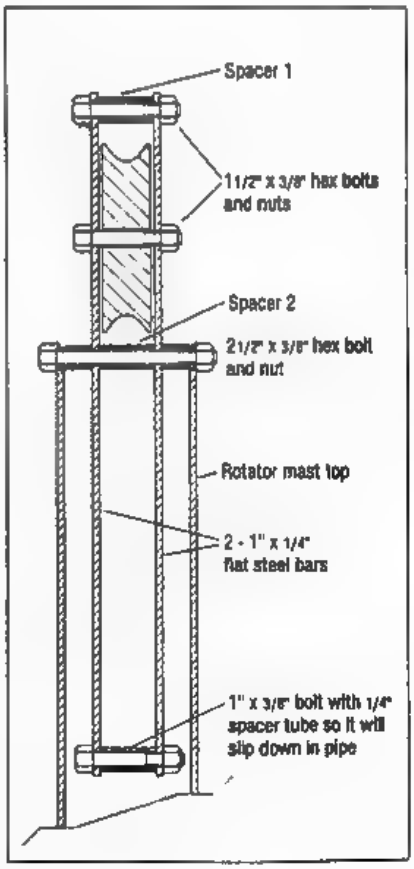


Diagram of the Rotator pipe installation.

VHF/UHF An Expanding World

Eric Jamieson VK5LP PO Box 169 Meningie SA 5264

All times are UTC

50 — 54 MHz DX Standings

DXCC Countries based on information received up to 20 December 1992.

Crossband totals are those not duplicated by two-way contacts.

A callsign cannot be displaced from its existing position except by another with a higher confirmed number.

Column 1: 50/52 MHz two-way confirmed contacts

Column 2: 50/52 MHz two-way claimed as worked but not confirmed

Column 3: Crossband 50/52 MHz to 28 MHz confirmed

Column 4: Crossband 50/52 MHz to 28 MHz worked

Column 5: Countries heard on 50/52 MHz

Callsign	1	2	3	4	5
VK4ZJB	93	94		4	
VK3OT	91	91			
VK4BRG	85	87			
VK2QF	83	84			
VK4ALM	68	70			
VK4ZAL	67	68			
VK2BA	62	63		4	
VK8ZLX	45	60		1	
VK3AMK	45	47			
VK6HK	45	45			3
VK8GB	42	42			13
VK5RO	39	48		3	
VK6RO	39	39		1	10
VK3AWY	34	36			
VK3AUI	34	35			
VK5LP	34	36			9
VK3NM	31	34			
VK5BC	29	63			
VK2DDG	25	26		2	13
VK4KHZ	23	34			
VK3XQ	23	25			2
VK6PA	35	57			
VK4TL	22	23			
VK2KAY	21	23			
VK2BNN	20	21			
VK9LG	20	20			
VK7JG	20	22			2
VK4BJE	19	25			
VK4KAA	19	20			
VK3TU	17	19			
VK2ZRU	16	19			4
VK4ZSH	16	16			
VK2ZSC	16	29			
VK9LE	14	14			
VK6OX	10	10		1	
VK5KL	06	11		1	6
Overseas					
JA2TTO	48	48			6
YJ8RG	25	25			

The next list is planned for the August 1993 issue. Copy, additions or alterations to me by 20 June 1993 please.

As in the past, where I believe a situation determines, I reserve the right to seek such clarification as may be deemed necessary, for any claimed QSLs. In the meantime, I thank those contributors who continue to support their claims with photocopies of QSLs or have them certified by other amateurs. It helps!

Countries worked from Australia on six metres

The first list was published in November, a list with many corrections in December, then a few corrections in January, now in February there are some more adjustments, which tends to illustrate that the list should now be more accurate. If you believe something should be altered please send details of callsign worked and by whom, date, time and mode.

The adjustments this month are: 3D2SM from VK4BRG to VK4FXX (VK4FP); 9M2DQ date change from 26/09/58 to 26/09/59; add CX4HS Uruguay (new country) 16/04/92 VK4FP; DL8HCZ change from VK8ZLX to VK8GF; HK0/W6JKV change to 01/04/92, VK2QF; I2CCD change to I4CIL, 15/02/91, VK4FP; IS0AGY change from VK4JH to VK4FP; KG4SM change to 25/03/89, VK2QF.

A very early log

Jeff VK8GF, amongst other things, recently sent me copies of a few pages from the log of his late father, Max Farmer VK5GF, who first came on the air in 1934. It was of interest to note that his first contact was with VK5LP on 24 January 1934! No, it was not me, but according to my 1937 Call Book, the callsign of LV Phillis, 5 Luhrs Road, South Payneham, a suburb of Adelaide. The contact was on 40 metres at 2230 local time with signal reports of 5x7 and 5x8. According to the QRI, Max used a crystal controlled transmitter and VK5LP one noted as PDC which I seem to recall means "pure direct current or pure DC" ie one without an obvious AC component.

I am trying to establish when Max first worked on five or six metres, most likely pre World War II. His first six metre contact with New Zealand was ZL2MF on 21/12/47, signal reports being 4x3 and 5x8/9, quite a variation but Max may have had the better station. This contact would have been made at a time somewhere near the peak of Cycle 18.

WIA QSL collection

Ken Matchett, the Hon Curator of the WIA QSL collection, advises that the collection contains no fewer than ten MDS cards, all from British Forces personnel, Army, RAF and Royal Signals, stationed in the Canal Zone following World War II Ken also said that the collection contained over 280,000 QSL cards!

Six metres

Mike Farrell VK2FLR says in a letter which arrived just too late for last month, that since April, six metres in general has been poor at his QTH of Glebe Point. His March/April workings included V73AT, K6STI, WA6BYA, K6FV, T30JH, 3D2AG, V31PC, XE2EB, ZF1RC, KG6UH/DU1, 3D2AG, XE1GE, N6AJQ, V85PB, KG6DX, JAs and heard KC6RR. All VK states on backscatter, especially VK6PA on F2 backscatter. He managed a contact with N4XIH in Florida which was the eastern-most contact into the US.

Word comes from **Adam VK3ALM** formerly VK3YWV, expressing surprise in the number of countries collectively worked from Australia on six metres. He said he has had a six metre rig since 1983, but fell into the trap which awaits so many newcomers to the band — listen around for a while, don't hear much, then give it away! He finally came back during the later part of Cycle 22 and worked and confirmed 11 countries.

Adam says that the only way to obtain a QSL from Tim V73AT is via his QSL manager: Charles Lloyd K2CL, 30 Crow Hill Road, Freehold, New Jersey, 07728, USA. Tim is presently signing N2PC/0 in Colorado, where there is 30 cm of snow, quite a change from his tropical island!

Adam VK3ALM reports a good opening to KH6 on 19/12 commencing round 0150 and continuing until 0300. He first heard the KH6HME beacon, then worked KH6IAA and KH6HH. Shel NI6E/KH6 was also there but having worked him before, Adam left him for others less fortunate. Shel was heard to say that he had worked stations in VK1,2,3,5 and 7, with signals to 5x9. Other VK3s to work KH6 included VK3XQ, AMK, ATN, AZY, BDL, BOB, CJS, DUT and DUQ. The KH6s appeared again on 20/12 for about ten minutes from 0245.

Nev VK2QF reports quiet conditions. On 18/10 between 0230 and 0430 he worked JA1,2,3,4,6 and 9, HL9UH, VK9WW (Willis Is), 28/10: JA1,2,3,4,5 and 9, HL9UH, N7ET/DU7 Between 1/11 and 23/11: ZL4AAA, JA1,2,7,8 and 0, ZL2TPY. QSL route for N7ET/DU7 is Dale Law, Silliman University, 6200 Dumaguete City, Philippines.

In response to my request, **Steve VK3OT** has forwarded a copy of his log for November and December 1992. During November

he worked 62 stations in Japan, and 25 in December, working into all districts except 9. There were extensive openings on 7/11, 24/11, 15/12 and 24/12. He logged one or more JA beacons on no less than 22 days of the two months. Also heard was JH8ZND on 50.480 MHz.

Other overseas contacts by Steve include: 19/11 ZL1ANJ, ZL3NE, ZL2TPY; 24/11 ZL3AAU, ZL4OY, ZL3MHF/b; 27/11 XE1GE; 2/12 ZL3MHF/b; 5/12 ZL2KT, ZL3MHF/b; 14/12 ZL2AGI, ZL2KT, ZL3MHF/b, ZL2TPY, T30W; 15/12 BZ4SBN; 18/12 ZL3TIC, ZL2KT, ZL3MHF/b, ZL2AGI; 19/12 FK8DH, KH6IAA, NI6E/KH6, KH6HME/b, KH6HI/b, KH6HH, AH6LR; 20/12 ZL4TBN, ZL3MHF/b, KH6IAA, KH6HI/b, ZL4AAA, TI2NA (reported in VK3); 21/12 P29BPL/b; 24/12 P29BPL/b, ZL1ANJ, ZL2AGI; 27/12 P29BPL/b.

The above are included as an indication that, despite many gloomy reports, there are stations out there waiting to be worked, if you care to look for them.

Steve reports that the most consistent Australian beacon in VK4BRG/b which can be heard almost on a daily basis via Es, also, VK8VF/b and VK4ABP/b heard on 24/12. The P29BPL beacon churns away but there seems no one from PNG is available for working. Es contacts have been made to VK1RX, VK2JSR, VK2MZ, VK2QF, VK3AMZ, VK4AFL, VK4ALM, VK4BRG, VK4PU, VK4JH, VK4TL, VK4VV, VK4WHO, VK4WTN, VK5LP, VK5NC, VK6BE, VK6KRC, VK6KXW, VK6ZWZ, VK7DA, VK8GF and VK8ZLX.

On the local scene, VK5 has been belted again with a succession of storms and heavy rain leading to flooding. I cannot remember when so many thunderstorms have appeared day after day. When they threaten, all the antennas are disconnected to prevent static discharges from burning out the front end of the receivers — hence there exist extensive gaps in the notes in my book.

Of major interest to me has been the absence of JAs at Meningie when compared with the number being heard/worked by Steve VK3OT, 400 km south east of me, eg on 15/12 Steve had a very good day while it was quiet here. On 16/12 I had a good day while Steve reported very little. Strange!

While Es openings to VK4 are almost a daily occurrence, but not always with good signals, there seems to have been more openings to VK6 and ZL than usual, with the ZLs penetrating both to northern VK4 and to VK6. KH6 was in here on 19/12, while on 20/12 a good catch was TI2NA at 2330 by VK3AMK and VK2. On 21/12 the band was open all day to somewhere in VK, with ZL, KH6, JA and Russian TV on 49.750 to add to the fun. I was not surprised to hear that VK4JH had worked ZL on two metres. On 22/12 there was a report of TI2NA working a VK5. I heard the P29BPL beacon at 0100. On 23/12 strong ZLs at 0030 followed by VK2,4 and 7.

24/12 was interesting. At 0030 the band was open simultaneously to VK6 and northern VK4 but not Brisbane. VK6BE in Albany was S9. VK4JH reported hearing the XE1 beacon; at 0200 four JA beacons were copied; at 0450 VK3OT was heard in conversation with VK1RX but only available at 15 degrees! 0500 found VK6BE, VK6JJ and VK6ZWZ, then at 0415 it swung back to VK4AFL and VK3MZ. 0548 VK4KU to VK9NS, then a broad coverage from VK8VF/b, VK4, VK2, and ZL. At 0600 VK3DUT was heard working VK4KAA while JAs were on the band. At 0843 VK6KJQ, VK4KK, VK4KU, VK7ZMF. At 0909 VK8ZLX was strong at 42 degrees ie side-on!

I was away on 25/12 but was told VK4 had worked VK7ZMF on two metres, which is not surprising considering the short skip to VK3 from VK5. On 30/12 at 2320 VK5BC worked ZL1ANJ and a ZL4 at 589. At 2340 VK3XRS was 5x9 but nothing on two metres. VK4ZAZ was 5x4 but VK4ALM managed 5x9.

31/12 at 0100 ZL4s again, at 0130 short skip to VK3TJA and VK3KK.

Turning the page, on 1/1/93 at 0120 ZL2UBG and ZL2AQR. At 0340 ZL1 and ZL2. At 0420 VK4s were heard working VK6WD followed by VK6s working ZLs. This was good to hear as they do not often have such a long path. I was magnanimous and let them have the contacts!! At 1009 VK4ZDK had a good path to VK7ZMF. After that it went a bit quiet here, with the occasional VK2s and VK4s, but nothing further afield. Overall, I worked what I wanted to, the remainder of the time being spent listening to others.

Jack T30JH is returning to Tarawa for a March/April stint, for the specific purpose of working a VK6 station. He will be making every effort to do so as he needs one to give him Worked-All-States. Jack asks those who have worked him before to please refrain from working him again!

Overseas news

Ted Collins G4UPS, sends a list showing the S5 callsigns issued to Slovenian stations with effect from 24/10/92. The list commences with S51AD and ends with S59ZZ and covers 152 stations formerly issued with the YT3, YU3 and 4N3 prefixes. The 4N3SIX beacon now signs S55ZRS.

Ted also included a list of the 82 EA stations that have received six metre permits from the Spanish PTT. These EA stations are obliged to use the EH prefix when operating on six metres. To 30/10/92 a total of 45 of these EH stations are reported to have been worked in the UK.

Chet Brandon PJ9EE, has packed away all his six metre equipment until the next cycle! Doug Woolley ZP6CW, is returning to the US, but has loaned his six metre equipment to the Radio Club of Paraguay and hoped that ZP5AA would be activated on the band. The ZP5AA beacon on 50.025 would remain operational. Doug worked 103 countries during his stay of two years.

Geoff Brown GJ4ICD, from Jersey says that in Europe there are 51 countries legally on six metres. European stations should be able to work these countries using Es propagation. Those which have not been activated include C31, 3A2, SV9, SV5 and HA but they may become available through dx-peditions during the northern hemisphere summer.

Geoff says that with the decline of solar flux levels, the liaison frequency of 28.885 MHz will eventually become unusable (outside Europe) so a new frequency has been established on 21.325 MHz. Time will tell whether it becomes necessary to resort to 14 MHz!

The bands above 50 MHz

Rod VK4KZR from McDowall, a Brisbane suburb, says regular contacts are made with Gordon VK2ZAB on 144.2. Also, on 14/12/92 he started a series of 144 MHz meteor scatter tests with Arie VK3AMZ and was able to complete an SSB QSO in 13 minutes. He used this mode last year for the Ross Hull Contest and the bursts were good enough to exchange full RST and serial number reports.

The only other DX activity has been the appearance of John VK4AUK, who is west of Maryborough and working into Brisbane with good signals on 144 and 432 MHz.

On 1296 MHz there is only local SSB activity. However, Rod is keen to pursue tests on any of the above bands, with stations outside the Brisbane area.

Closure

Well, it's been a mixed bag this month. There has not been a lot of correspondence so this means that people have not been working many stations, or have been too busy working them to write! In general, sporadic E has been just that, sporadic, nevertheless, there have been some very good days.

I am very pleased to observe that there are a large number of stations who QSY from 50.110 after initiating a contact, though a few are still content to hold QSOs on the calling frequency. It would be even more pleasing to see 50.125 used as an Es and local calling frequency, maybe it will become more so in the future.

Closing with two thoughts for the month:

1. Rumour is one thing that gets thicker as you spread it, and,

2. Every time we hear a disc jockey play the top 40 tunes, we get the shakes thinking what the bottom 40 must sound like.

73 from The Voice by the Lake.

ar

AMSAT Australia

Bill Magnusson VK3JT 359 Williamstown Rd Yarraville VIC 3013
Packet: VK3JT@VK3BBS

National co-ordinator
Graham Ratcliff VK5AGR
Packet: VK5AGR@VK5WI

AMSAT Australia net:
Control station VK5AGR
Bulletin normally commences at 1000z, or 0900z depending on daylight saving and propagation . Check-ins commence 15 minutes prior to the bulletin.
Frequencies: (again depending on propagation conditions)
Primary 7.064 MHz (Usually during summer).
Secondary 3.685 MHz (Usually during winter).
Frequencies +/– 5 kHz for QRM.

AMSAT Australia newsletter and soft-ware service:
The newsletter is published monthly by Graham VK5AGR. Subscription is $25 for Australia, $30 for New Zealand and $35 for other countries by AIR MAIL. It is payable to AMSAT Aust addressed as follows:
AMSAT Australia
GPO Box 2141
Adelaide SA 5001

ZRO tests:

With AO-13's apogees slowly coming further south and operating conditions getting better we should see renewed interest in this bird. For some time now it has been "in the northern hemisphere" for most of its time but for the remainder of its life, (maybe 3 years or so) we will be able to take part in many of the activities we became familiar with on AO-10 before it went out of control. I mentioned "hog callers" and "alligators" last month. Fortunately the new generation of amateur radio satellites will have devices on board to discourage such practices. At the other end of the scale from these undesirable things we have great things like the ZRO tests.

The ZRO Memorial Technical Achievement Award Program was set up as a test of operating SKILL and equipment performance. It has nothing to do with who can shout the loudest. During a typical ZRO run, a control station will send numeric code groups using CW at 10 WPM At the beginning of the run, uplink power from the control station will be set to match the general beacon downlink signal strength. This is level "zero". The control operator will send and repeat a random 5 digit number, then LOWER the uplink power by 3 dB (half power) and repeat the procedure with a new random number. This will continue to a level 27 dB below the beacon (level 9).

A participating listener monitors the downlink signal until he can no longer copy the numbers. Those who can hear the beacon at level zero qualify for a basic award. The challenge is to improve your station receive performance to the point where the lower level downlink signals (level 6-9) can be copied. To be fair to all these tests have to be carried out at times when squint angles are most favourable, ie. around apogee. Now that we can see some apogees we can look forward to once again taking part in these ZRO tests.

New Satellites on the horizon:

To whet your appetite over the coming year or so here is a list of goodies in the planning or testing stage. One of the major points brought out in the recent AMSAT-NA Space Symposium in Washington, DC was that there are 8 amateur radio satellites currently either under construction or will soon be launched. The following list gives the name of each satellite and their origin:

1) RS-15	AMSAT-UA
2) ARSENE	FRANCE
3) UMAMSAT-1	AMSAT-XE
4) ITSAT	AMSAT-IT
5) PHASE-3D	AMSAT
6) TECHSAT	ISRAEL
7) SUNSAT	AMSAT-SA
8) SEDSAT-1	University of Alabama Huntsville, AL

As many of the speakers at the Space Symposium mentioned, the next two-to-three years will be a very exciting time for OSCAR satellite users.

Arsene solar cell array:

A recent ESA (European Space Agency) publication serves to show how commercial satellite development can benefit from testing and research carried out on aboard amateur radio satellites. It seems that the solar cell arrays on board Arsene are of particular importance since Arsene will be the first satellite completely powered by European GaAs solar arrays.

To quote their description, The photovoltaic generator consists of six body mounted solar panels providing 43 W at End of Life (EOL) at 25.5 V with an active area of 0.8 square metres. It comprises 986 GaAs solar cells assembled in 29 strings of 34 cells connected in series. The "Beginning of life" output of the six panels is 182.6 W max at 25 degC. They go on to say that the experience gained with the Arsene program will continue with the realisation of more than 11 GaAs solar panels for three different satellites.

UO-11 telemetry display soft-ware:

I received a copy of TLM, a telemetry decode and display program from AMSAT-UK just before Christmas. For those interested in this area I'll review it next month. In the short look I have had so far, it seems to be quite comprehensive.

Phone BBSs beware!

Two separate incidents over the Christmas period serve to show just how careful you have to be when down loading software from phone (or packet) BBSs. The first was when a friend from the Astronomical Society expressed concern to me that he was having a lot of trouble updating the keps in Instantrak. It seems that every set of keps containing zeros (just about every set) would make the program lock up or go crazy.

He subsequently told me he had down loaded the program from a phone BBS. It obviously had a glitch or was someone's "customised" copy. I informed him that the program shouldn't have been there in the first place as it is owned by AMSAT, and that the best thing he could do was to scrub it and get a good copy from AMSAT-VK. He did and everything is now OK.

The second instance was when a friend had used a bit of basic source code from a program he had down loaded from a local phone BBS in another program. Yes, you guessed correctly, *it contained a virus which subsequently infected his whole system.* Just goes to show how careful you have to be.

Next month:

Soft-ware review of the TLM telemetry decode and display program from AMSAT-UK. I have had some inquiries so next month I'm going to attempt the impossible. I will try to give as complete a list as possible of ALL the frequencies used on ALL the currently operational amateur radio satellites.

Wish me luck and keep those cards and letters coming in folks.

Help protect our frequencies — become an intruder watcher today

How's DX?

Stephen Pall VK2PS PO Box 93 DURAL NSW 2158

According to custom or hearsay news, some amateurs make "New Year Resolutions" at the end of December or at the beginning of January each year. The resolutions so made are supposed to benefit one personally, like listening for rare DX before starting transmitting; or to benefit other amateurs, like not tuning up on a frequency on which a QSO is already in progress.

Have you made any similar resolutions as an amateur or a DXer? Or have you decided not to make any, and continue in the same old way, thinking the world around you has not changed? This is now the time of year to take stock of ourselves and our attitude to the hobby we enjoy and which we are trying to keep for future generations. Good luck in your endeavour for a change.

Cambodia — XU

Due to the United Nations supervisory activity in Cambodia, a number of new stations can be heard on the bands.

Sanyi XU7VK (HA7VK) is still active on the DX window on 14MHz around 1130 UTC. He told me his licence is valid to the end of February, but he is already in the process of negotiating for a licence renewal for a future three months. At present he can operate only on 15, 20 and 40 metres. His QSL manager is HA0HW Szabo Laszlo, Box 24, 4151 Puspokladany, Hungary.

Eric XU0NU was heard on 21MHz SSB at around 0531. QSL goes to F6FNU. XU3Cross net, giving his QSL manager as VK3OT.

Somalia — T5

Another of the world's trouble spots, requiring United Nations intervention.

Chuck KA1PM was heard operating with the callsign T5CB on 14195, 14246, 21295 and 28455kHz. QSL goes to Chuck Brainard, PO Box 1311, Buena Vista, CO 81211-1311 USA.

It was also reported that Peter KH6HBZ will be active from Somalia in the near future. A number of amateurs on active service with the US Forces received permission to take their amateur equipment to Somalia. T5SDA was also heard operating from Mogadishu, giving his QSL information as N7IDI.

North Korea — P5

In the past few months there were quite a number of rumours circulating that the appearance of this rare DX country was imminent on the bands. Finnish, American, Japanese, Russian, Czech and even Hungarian groups were mentioned as possible operators.

Early December, a station signing P5IAA appeared on 15 metres, who gave the QSL address of a Hungarian station. At the end of November P5DTG was heard operating, and he gave his QSL info as OK1DTG.

P5RS7 was active from the middle of December on 21295kHz. This station was connected with Romeo 3W3RR. Romeo and two other operators were active until the end of December 1992. They were working with a licence issued by the military, which would explain the strange composition of the callsign. Romeo hopes his operation will be accredited by the DXCC desk of the ARRL. The QSL manager for this operation is JA1HGY.

"New" DX countries in Europe

Whilst the war in the former Yugoslavia destroys property and kills innocent people by the thousands, causing untold misery, the changed circumstances have now created "new" DX countries. The ARRL Awards committee declared the following former Yugoslav republics count as separate DX countries: Republic of Croatia 9A (formerly YU2) as from 26 June 1991; Republic of Slovenia S5 (formerly YU3) as from 26 June 1991; Republic of Bosnia-Hercegovina 4N4 (formerly YU4) as from 15 November 1991. Incidentally, the 9A QSL Bureau's address is HRS, Box 546, 41000 Zagreb, Croatia. The address of the S5 QSL Bureau is ZRS, Box 180, 61001 Ljubljana, Slovenia.

The former Czechoslovakia ceased to exist as from 1 January 1993. The country has split into two separate independent republics following a referendum. One is the Republic of Slovakia, with the capital Bratislava. The other is the Czech Republic, with the capital Prague. On 2 January, Rudi, the former OK3PC, was already on the bands with the new callsign OM3PC, for Slovakia.

Howland Island — KH1

Howland Island is located at 00 deg 48'N and 176 deg 38'W in the Pacific Ocean, and is uninhabited. It is under the control of the US Department of Interior, Fish and Wildlife Service as a national wildlife refuge. The island came into the news as early as 1937 when the well known US woman aviator Amelia Earhart, at the age of 40, vanished near the island in her attempt to fly around the world. To my knowledge, there were amateur activities from this island in 1948 and 1988. According to a news release dated 7 December 1992 issued by ON6TT, the activity will start on 26 January and should be in full swing when you read these notes. There will be 10 operators, all seasoned DXers and contesters. Six from the US, and one each from France, UK, the Netherlands and Belgium.

The activity is planned for a full seven days, and they intend to have 50,000 QSOs, with special attention to Europe.

Future DX activity

- According to various DX sources N6QHO/D2 will be active in Angola for the next two years.
- The Italian Antarctic station IA0PS is active until mid-February. QSL to home call 10JBL.
- 3W4VL and 3W4DK in Vietnam are now active. QSL to OK3IA.
- Lionel, VK6LA appeared on the 14MHz band on 8 December at 0951 UTC operating from Cocos (Keeling) Islands with the callsign VK9CB.
- VP8CLR is active from South Georgia for the next 12 months. QSL to PO Box 610, Swansea, Wales, UK.
- Kingman Reef KH5K and Palmyra Island KH5 will be activated by a group of amateurs, some of whom took part in the Clipperton FO0CI and South Sandwich VP8SSI operations. Pete N0AFW will lead a group of 12 operators departing Honolulu on 28 February. The trip to Palmyra will take five days. They will be on both islands simultaneously for just over a week.
- Vance W5IJU is planning a DXpedition to Navassa Island from 26 March to 3 April.
- The Desecheo KP5 operation was planned for 28 December to 4 January. QSL direct only to N0TG Randy Rowe, PO Box 891, Desoto, TX 75123-0891, USA.

Interesting QSOs and QSL information

Note: callsign, name, frequency, mode, UTC, month.

9K2MU-14013-CW-2100-Nov. QSL to 9K2AR, MRA Maarafi, Box 97, Safat 13001, Kuwait.

FS/N3NCW-Joe-14222-SSB-Nov. QSL to home call, callbook address.

V73CT-Ken-10120-CW-Nov. QSL to Oklahoma DX Association.

V31DX-Bill-14209-SSB-Nov QSL to KA6V.

D68GA-Don-14193-SSB-1527-Nov. QSL to N6ZV.

XX9AS-Alberto-14180-SSB-1540-Nov. QSL to KU9C.

ZA1M-Beri-14022-CW-0632-Nov. QSL to HB9BGN.

HZ1TA-14250-SSB-0549-Nov. QSL to OE6EEG.

A71AL/SP5EXA-10104-CW-2003-Nov. QSL to Box 22101, Doha, Qatar.

HS0AC-Ray-14322-SSB-Dec. QSL to Box 2008, Bangkok, Thailand.

FG5FC-John-14175-SSB-1210-Dec. QSL to F6DZU.

Note by VK2PS: Please let me know if you need full QSL addresses as in the past, or is the callsign adequate as above?

From here and there and everywhere

- ZL6JAM was a special event station from the 13th Scout National Jamboree attended by about 7500 scouts from many nations, among them 230 from VK. The station was active on all bands in many modes. All contacts will be automatically acknowledged by a special QSL card sent through the Bureau system.
- The DXCC desk of the ARRL announced on 1 December 1992 that QSOs conducted with Iranian amateurs after 20 August 1988 are acceptable for the DXCC Award.
- Eric WZ6C was heard operating with his new Bangladeshi callsign S21ZG. Nizam S21B is also active on 14183kHz at around 1200.
- If you worked Finnish stations with the suffix FIN they were the stations taking part in the Finland 75th Anniversary Contest on 6 December. A special QSL card is available to mark the event
- The special event station VI150SYD celebrating the City of Sydney 150th anniversary ceased operation at 2359 UTC on 31 December 1992.
- The well known DX operator and contester, Al Slater G3FXB, died suddenly on 11 November 1992 whilst winding down his antenna tower.
- The Dominican Republic HI8 has changed its name to Dominicana.
- L4H was a special event station celebrating the anniversary of the Latin-American DX Net. QSL to PO Box 1401, Cordoba 5000, Argentina.
- Ever wondered if there is an international organisation which collects interesting QSL cards for preservation for "tomorrow"? OVSV, ADXB and Radio Austria International, the National Association of Austrian Radio Amateurs, the Association of the Austrian Short Wave Listeners and the Foreign Service of the Austrian Broadcasting Corporation are in charge of the QSL Collection. Their aim is to collect, keep archives and exhibit in public on a volunteer basis verifications of radio reception from all over the world. The QSL Collection is being supported by many national amateur societies, hundreds of individual operators and all the major DXpeditioners and their QSL managers. Their address is QSL Collection, c/- ADXB, PO Box 11, A-1111 Vienna, Austria.
- The former East German callsigns Y2 etc have disappeared from the bands. They have been allocated prefixes from the DL1-9 series.
- If you worked S92SS, he was Charles Lewis, ex-A22AA. QSL direct with SAE and one IRC to C Postal 522, Sao Tome, DRSTP, West Africa via Portugal.
- Romeo's Iran operation 9D0RR (5-17 Aug 1992) has been approved for the DXCC Award.
- Reading the Honour Roll Listings by the ARRL DXCC in the December 1992 issue of QST, I found the following interesting VK callsigns: Phone: VK5MS 323, VK4LC, VK5WO, VK6HD, VK6RU, all at 322, VK6LK 321, VK3DYL and VK5QW 317 and VK9NL 316. Mixed: VK5WO and VK6HD 322, VK9NS 320, VK3YL 319, VK3DYL and VK5QW 317. CW: VK9NS 317 (the only listing). As at 1 January 1993 there are 326 countries on the DXCC list. This will grow to a possible 327 when the DXCC includes the new Czech and Slovak republics and deletes the old Czechoslovakia entry.
- Lionel VK6LA, at present operating as VK9CB, advised Neil VK6NE that a straight-out airfare to Cocos (Keeling) Island costs $1250 return with the return date left open. The fixed go and return tourist rate is much lower. Accommodation on Cocos may be had for $150 a week. The island now has TV and BC stations, so when you go there leave your 1kW linear at home! Freight costs $9kg. The island is duty and sales tax free, and VK6NE would like to know in advance (he is the Federal QSL Manager for the VK9 and VK0 callsigns) if any amateurs intend to go there to operate from Cocos (Keeling) Island.
- Steve P29DX advised Neil VK6NE that in 1988 he operated as VK9YG and as AX9YG. He said he replied to cards sent for that activity to England to his old call G4JVG. However, he is unable to reply to a big batch of VK9YG QSL cards (total 1.25kg) at present still in the VK9 QSL Bureau, because he has no more VK9YG cards left for Bureau transmission.

Well known DX-ers Festus 9M6FH and Dave P29ST in the Hervey Bay Amateur Radio Club (Qld) meeting room.

Direct QSL cards received

S2/HA5BUS (7 mths — mgr) — 4U1UN (8 mths — mgr) — 8R1UN (6 mths) 4N2MP (5 mths — opr) — HS1HJJ (4 mnths — opr), CU30C (5 mnths — mgr), A35KB (7 wks — opr), 4Z4UR (4 wks — opr) — PJ1B (4 wks — mgr) — OG0M (2 mths — mgr).

Thank you

Thank you all who have assisted me in compiling these notes, especially to VK2LEE, VK3DD, VK4DA, VK4OH, VK5WO, VK6NE, VK8AV, OE3WHC, V73CT, and the following publications: QRZ DX, The DX Bulletin and the DX News Sheet.

Good DX and 73

ar

Contests

Peter Nesbit VK3APN — Federal Contest Coordinator
24 Sovereign Way Avondale Heights Vic 3034

Contest Calendar Feb-Apr 93

Rules are in the indicated issue.

Feb	13/14	PACC CW/SSB DX Contest	(Jan 93)
Feb	13/14	RSGB 160m CW Contest	(Jan 93)
Feb	13/14	Spanish RTTY Contest	(Jan 93)
Feb	20/21	ARRL DX CW Contest	(Feb 93)
Feb	26/28	CQ WW 160m SSB Contest	(Jan 93)
Feb	27/28	RSGB 7MHz CW Contest	(Feb 93)
Feb	27/28	UBA CW DX Contest	(Jan 93)
Mar	6/7	ARRL DX SSB Contest	(Feb 93)
Mar	13/14	BERU CW Contest	(Feb 93)
Mar	20/21	John Moyle Field Day	(Feb 93)
Mar	20/21	Bermuda Contest	
Mar	20/21	BARTG RTTY Contest	
Mar	27/28	CQ WPX SSB Contest	
Mar	27/28	RSGB 160m SSB Contest	(Jan 93)
Apr	1	Poisson d'Avril Contest	
Apr	4/5	SP DX Contest	
Apr	17/18	SARTG AMTOR Contest (Scandinavian)	
Apr	25/26	Swiss Helvetia Contest	

Since taking over this column 3 months ago, several readers have sent some very nice letters regarding the new extended contest coverage. Your letters and suggestions have been greatly appreciated, and I can assure you and everyone else of my commitment to present all necessary information to enable readers to confidently participate in contests relevant to VK. I know there are more VK "top guns" out there than activity over recent years would suggest; let's show the rest of the world that we are a force to be reckoned with! (For VK also read P29 — you are not forgotten!)

When forwarding logs, it is suggested that you pin or staple a self-addressed mailing label to your summary sheet to assist certificate processing. Especially for the larger contests, writing addresses on the envelopes/mailing tubes can be a quite sizeable task for the contest organisers.

Material for publication should be forwarded to the above address at least five weeks before the month of issue. Until next month, good contesting!

73 Peter VK3APN

1993 John Moyle Field Day Contest

0100 UTC Saturday to 0759 UTC Sunday, 20/21 March 1993.

by Phil Raynor VK1PJ

Well, once again those who enjoy a weekend in the bush should be planning for the JM Field Day. This year, as promised, there are no rule changes apart from a change to the scoring for 6m QSOs. The helpful hints received last year showed that there is nothing basically wrong with the rules. However I would suggest that operators not only read and familiarise themselves with these rules, but also read the comments printed with last year's results.

I hope to be on the air the weekend prior to the contest, family and work commitments permitting, to help anyone with rule interpretation etc. If you have any complaints, please submit them by phone or with your entry. My planned schedule is 14.275 MHz at 1200 EST and 3.570 MHz at 2030 EST (approx) Sunday 14 March. The 80m meeting will commence when the VK1 Division broadcast finishes. This is an experiment to try and improve the contest. For those who do not have HF callsigns I hope you can find a way of joining one of the nets, maybe as a second operator. If anyone would like to contact me privately, my home number is (06) 292 3260 and work (06) 280 5966. See you all on the air. I hope to be one of the operators of VK1DX (Canberra DX Group).

AIM

1. To encourage and provide familiarisation with portable operation, thus providing training for emergency situations. The rules are therefore designed to encourage field operation.
2. The contest is scheduled for the third weekend in March each year, and this year (1993) will run from 0100 UTC Saturday to 0759 UTC Sunday, 20-21 March.
3. Entries shall consist of one choice from each of the following (e.g. 6 hour, portable, single operator, phone, VHF/UHF):
   a. 24 or 6 hour;
   b. Portable, Home, or Receive;
   c. Single or Multiple operator;
   d. Phone, CW, or Open mode;
   e. HF, VHF/UHF, or All Band.

SCORING

4. Home stations for all sections shall score:
   a. 2 points per QSO with each portable station,
   b. 1 point per QSO with other home stations.
5. Portable HF stations shall score 2 points per QSO.
6. Portable stations shall score the following on 6m:
   a. 0-49 km, 2 points per QSO;
   b. 50-99 km, 10 points per QSO;
   c. 100-149 km, 20 points per QSO;
   d. 150-199 km, 30 points per QSO;
   e. 200-499 km, 50 points per QSO;
   f. ≥ 500 km, 2 (two) points per QSO.
7. Portable stations shall score the following on 144MHz and higher:
   a. 0-49 km, 2 points per QSO;
   b. 50-99 km, 10 points per QSO;
   c. 100-149 km, 20 points per QSO;
   d. 150-199 km, 30 points per QSO;
   e. ≥ 200 km, 50 points per QSO.
8. For each VHF/UHF QSO where more than 2 points is claimed, either the latitude and longitude of the station contacted or other satisfactory proof of distance must be supplied.

LOG SUBMISSION

9. Logs may be submitted either on paper or MS-DOS floppy disk. Disks may be 3-1/2 or 5-1/4 inches, 40 or 80 track. If on disk, ASCII text is preferred, although the following formats are acceptable: WordPerfect, Wordstar, Word 5, DBase, or Lotus 123.
10. Each log must be accompanied by a summary sheet (on paper) showing callsign, name, mailing address, section entered, number of contacts, claimed score, location of the station during the contest, equipment used, and for multi-operator stations, the callsigns and signatures of all operators. If any VHF/UHF QSOs have been made which qualify for more than 2 points, the station location must include latitude and longitude.
11. The summary sheet must include the following declaration signed by the operator, or in the case of a multi-operator station, one of the licensed station operators: "I hereby declare that this station was operated in accordance with the rules and spirit of the contest"
12. Logs must be postmarked no later than 30 April 1993, and forwarded to: John Moyle Contest Manager, PO Box 315, Fyshwick, ACT 2609, Australia.

AWARDS

13 At the discretion of the Contest Manager, certificates will be awarded to the winner of each portable section, including portable receiving. Note that entrants in a 24 hour section are ineligible for awards in the corresponding 6 hour section

14. The outright winner will be awarded an individually inscribed wall plaque as permanent recognition. The Australian station with the highest CW score will be awarded the President's Cup, a perpetual trophy held at the Executive Office. Certificates for the winners of the various sections will be awarded at the discretion of the Contest Manager.

DISQUALIFICATION

15. General WIA contest disqualification criteria, as published in Amateur Radio from time to time, applies to entries in this contest. Logs which are illegible or excessively untidy are also liable to be disqualified.

DEFINITIONS

16. A portable station comprises field equipment operating from a power source independent of any permanent facilities, e.g. batteries, portable generator, solar power, wind power.
17. All equipment comprising a portable station must be located within an 800m diameter circle.
18. A single operator station is where one person performs all operating, logging, and spotting functions.
19. A single operator may only use a callsign of which he/she is the official holder. A single operator may not use a callsign belonging to any group, club or organisation for which he/she is a sponsor except as part of a multi-operator entry.
20. A multi-operator station is where more than one person operates, checks for duplicates, keeps the log, performs spotting, etc.
21. A multi-operator station may use only one callsign during the contest.
22 Multi-operator stations may use only one transmitter on a given band at any one time, regardless of the mode in use.
23. Multi-operator stations must submit a separate log for each band.
24. A club, group, or organisation will be considered a multi-operator station by default.
25. None of the portable field equipment may be erected on the site earlier than 24 hours before the beginning of the contest.
26. Single operator stations may receive moderate assistance prior to and during the contest, except for operating, logging and spotting. The practice of clubs or groups providing massive logistic support to a single operator is, however, totally against the spirit of the contest. Offenders will be disqualified, and at the discretion of the manager, may be banned from further participation in the contest for a period of up to 3 years.
27. Phone includes SSB, AM and FM.
28. CW includes CW and RTTY.
29. It is not expected that other digital modes will be used in the contest, but if they are, they shall be classed as CW.
30. All amateur bands may be used except 10, 18 and 24MHz. VHF/UHF includes all amateur bands above UHF.
31. Cross-mode contacts are not permitted for contest credit.
32. Cross-band contacts are not permitted for contest credit.
33. Contacts made via repeater systems are not permitted for contest credit. However, repeaters may be used to arrange a contact on another frequency where a repeater is not used for the contact.
34. Portable stations may make repeat contacts and claim the appropriate points providing that at least three hours have elapsed since the previous valid contact with that station on the same band and mode.
35. Home stations may not claim points for repeat contacts.
36. Stations must exchange ciphers comprising RS/RST plus a 3 digit number commencing at 001 and incrementing by one for each contact.
37. Portable stations shall add the letter "P" to their own cipher, e.g. 59001P for the first contact.
38. Multioperator stations shall commence operation on each band with 001.
39. Receiving stations must record the ciphers sent by both stations being logged. QSO points will be on the same basis as for Home Stations, unless the receiving station is portable.
40. The practice of commencing operation and later selecting the most profitable operational period within the allocated contest times is not in the spirit of the contest, and shall result in disqualification. The period of operation commences with the first contact on any band or mode, and finishes either 6 or 24 hours later.

73
Phil

ARRL QX Contest (CW & SSB)

The object of this contest is to work as many W/VE amateurs as possible on 1.8-30 MHz, excluding 10, 18 and 24 MHz. The CW section is on the third full weekend in February (20-21 Feb 1993), and phone on the first full weekend in March (6-7 Mar 1993). The contest runs from 0000z Saturday to 2400z Sunday.

Single operator categories include single band, all band, all band QRP (≥ 5W output), and all band assisted. In these categories, the operator performs all operating and logging functions. If assistance is received from spotting nets or other alerting systems not physically located at the station, the operator must enter the all band assisted category.

Multi-operator stations are where more than one person operates, checks for duplicates, keeps the log, etc. Categories include single transmitter (max 1 transmitted signal at any one time), two transmitter (max 2 transmitted signals), and unlimited (max 1 signal per band). In the single and 2 transmitter categories, once a transmitter has begun operation on a band, it must remain on that band for at least 10 minutes. Listening time counts as operating time.

Exchange RS(T) and a 3 digit number indicating approx output power. W/VE stations will send RS(T) and state/province.

Score 3 points per W/VE QSO. The multiplier is the sum of US states and District of Columbia (DC) (except KH6/KL7), NB (VE1), NS (VE1), PEI (VE1 or VY2), PQ (VE2), ON (VE3), MB (VE4), SK (VE5), AB (VE6), BC (VE7), NWT (VE8), YUK (VY1), NF (VO1), and LAB (VO2) worked to a maximum of 62 per band. The final score equals the total QSO points times the multiplier.

Miscellaneous rules include the stipulation that for contest credit, an operator may not use more than one call sign from a given location; crossmode contacts are not allowed; the use of non-amateur radio means of soliciting contacts (eg telephone) is precluded; and all transmitters and receivers must be located within a 500m diameter circle, excluding directly connected antennas (this precludes the use of remote receiving facilities, excepting spotting nets used for multiplier hunting as allowed for the single operator assisted and multi-operator categories).

Logs must indicate times in UTC, bands, call signs, complete exchanges sent and received, and QSO points. Multipliers must be clearly marked the first time they are worked Duplicate contacts must not be claimed for credit, as the entry may be disqualified if duplicates contribute more than 2% to the overall score. Entries with more than 500 QSOs must include crosscheck (dupe) sheets. Logs may optionally be submitted on MS-DOS disks, 3-1/2 or 5-1/4 inch 40 or 80 track, in an ASCII file using the ARRL Standard File Format Attach a summary sheet with call, name, address, category, score, etc. Multi-operator entries must list all operators. Include a signed declaration that all radio regulations and contest rules were observed.

Entries must be postmarked by 7 April 1993 or will be classed as checklogs (no exceptions)! Mark the envelope CW or phone and send the log to ARRL Contest Branch, 225 Main Street, Newington, CT 06111, USA.

Certificates will be awarded to the top scoring stations in each country and category, and plaques to the top worldwide and continental stations.

RSGB 7MHz CW Contest

This contest has the object of contacting as many British Isles stations as possible on 40m CW, and this year it runs from 1500z Saturday 27 Feb to 0900z Sunday 28 Feb 1993.

Frequencies are 7.000-7.030 MHz. Exchange RST plus serial number starting at 001. UK stations will add their county code. Oceania stations score 30 points per QSO, and the final score is the total QSO points times the number of UK counties worked.

Include a summary sheet showing all standard details, plus a checklist if more than 80 QSOs are made. Logs must arrive by 19 April 1993 at the address given for the Commonwealth Contest (see below). Certificates will be awarded to the leading entrants in each overseas section.

RSGB Commonwealth Contest (BERU) 1993

This contest is to promote contacts between stations in the British Commonwealth and Mandated Territories, and runs each year on the second full weekend in March (this year from 1200z Saturday 13 March to 1200z Sunday 14 March 1993).

Categories are single operator only, single and multiband. Operators may not receive any assistance whatsoever, such as the use of spotting nets, packet clusters, etc.

Contacts may be made with any station using a British Commonwealth prefix, except those within the entrant's own call area. Allowable bands are 80, 40, 20, 15 and 10m, CW only. Entrants should use the bottom 30kHz of each band, except when contacting novice stations above 21030 and 28030kHz.

Exchange RST and serial number commencing with 001. Score 5 points per QSO, with a bonus of 20 points for each of the first 3 QSOs with each Commonwealth call area, on each band (note that for the purpose of this contest, the entire UK area counts as *one* call area).

A number of "headquarters" stations will be active during the contest and will send "HQ" after their serial number to identify themselves. Every HQ station counts as an additional call area, and therefore attracts the 20 point bonus. Entrants may contact their own HQ station for points and bonuses.

Duplicate contacts must be clearly marked and not claimed for points. Each unmarked duplicate contact found for which points have been claimed will result in the deduction of 55 points. Entries containing more than five such duplicates will be liable to disqualification.

Entrants making more than 80 QSOs should include a checklist of the callsigns appearing in the log, sorted into alphabetical order and with either the serial number sent or the time of contact beside the callsign.

Each entry must include a cover sheet containing call, name, address, scores claimed on each band, equipment details, signed declaration, any comments, etc. Send the log to arrive before 18 April 1993 to: RSGB HF Contests Committee, c/o S. V. Knowles G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey, CR& 7AF, England. Airmail is recommended, as late logs may be treated as check logs.

Awards include the Senior and Junior Rose Bowls, and Certificates of Merit, to the leading stations in the various categories and call areas.

The following call areas are recognised for the purpose of scoring in the 1993 Commonwealth Contest:

A2, A3, AP, C2, C5, C6.

G, GB, GD, GI, GJ, GM, GU, GW (all one area).

H4, J3, J6, J7, J8.

P2, S2, S7, T2, T30, T31, T32, T33.

V2, V3, V4, V5, V8.

VE1, CY0 (Sable), CY0 (St Paul), VE2, VE3, VE4, VE5, VE6, VE7, VE8. VY1 (Yukon).

VK1, VK2, VK3, VK4, VK5, VK6, VK7, VK8, VK9C, VK9L, VK9M, VK9N, VK9W, VK9X.

VK0 (Heard), VK0 (Macquarie), VK0 (Antarctica).

VO1, VO2.

VP2E, VP2M, VP2V, VP5, VP8 (Falklands), VP8 (S Georgia), VP8 (S Sandwich), VP8 (S Shetland), VP8 (Antarctica), VP9, VQ9, VR6, VS6/VR2.

VU, VU4 (Andaman), VU7 (Laccadive).

YJ, Z2, ZB2, ZC4, ZD7, ZD8, ZD9, ZF, ZK1(N), ZK1(S), ZK2, ZK3, ZL0, ZL1, ZL2, ZL3, ZL4, ZL5, ZL7, ZL8, ZL9.

3B6/7, 3B8, 3B9, 3DA.

4S, 5B4, 5H, 5N, 5W, 5X, 5Z.

6Y, 7P, 7Q, 8P, 8Q, 8R.

9G, 9H, 9J, 9L.

9M2, 9M6/9M8, 9V, 9Y.

GB5CC RSGB HQ station, VK3WIA WIA HQ.

All calls operated from Commonwealth controlled of the Antartic, VK0, VP8, ZL5 count as one call area.

Results of 1991 CQWW DX SSB Contest

(Shown in order: call, band, score, QSOs, zones, countries. Asterisk = low power category ≥ 100W; A = all band; bold certificate winner)

Single Operator:

VK2BEX	A	2,146,658	2288	112	211
VK5GN*	"	430,650	762	76	123
VK3PU*	"	397,824	563	88	168
VK2CCK*	"	283,383	565	67	116
VK6JIP	"	184,870	471	51	88
VK3ALZ	"	99,261	324	42	81
VK8SD	"	83,054	235	48	84
VK5FOX	"	36,210	170	17	28
VK2KS	28	487,015	1406	32	87
VK2ARJ*	"	317,499	1190	30	61
VK3TZ	"	145,782	649	27	78
VK4NAD*	"	135,801	577	26	54
VK8BE*	"	1,938	34	10	9
VK4DMP	21	48,025	203	29	56
VK3SM*	14	29,337	134	25	52

Multi Operator Single Transmitter:

VKIDX	2,434,244	2879	91	202
VK6OD	862,068	1479	70	129

VK2BEX was Zone 30 Leader

Results of 1991 Scandinavian Activity Contest

(Shown in order: call, section, score, QSOs, QSO points, multiplier.)

Single Operator All Band:

VK2APK	CW	30,176	286	328	92
VK2APK	SSB	10,846	155	187	58
ZL1AAS	SSB	7,353	125	129	57
P29DX	SSB	1,470	40	42	35

All the above were certificate winners, and VK2APK won the plaque for Oceania in both the CW and SSB sections of the contest.

The next SAC contest is in September, and rules will be published in AR.

ALARA

Robyn Gladwin VK3ENX Box 438 Chelsea 3196
VK3ENX@VK3YZW

Results of the twelfth ALARA Contest, November, 1992.

1	VK4DLS	Lyn	748	Top score overall, top phone, top VK4 non-member, top VK YL trophy
2	VK5NYD	Nora	616	Top VK ALARA member, top VK Novice, top VK5 ALARA member
3	V85BJ	Barbara	418	Top DX YL trophy, top Pacific Is ALARA member
4	VK4RL	Robyn	329	Top VK4 ALARA member
5	VK3NYL	Judy	324	Top VK3 ALARA member
6	VK3KS	Mavis	265	
7	ZL1AMN	Dave	259	Top ZL OM
8	VK5BMT	Maria	256	
9	ZL1BRX	Eileen	249	Top ZL non-member
10	VK3DYL	Gwen	239	
11	VK5CTY	Christine	234	
12	VK4BJJ	Julie	228	
13	VK4PT	Pat	207	
14	ZL1ALK	Celia	205	Top ZL ALARA member
15	VK2DDB	Dorothy	179	Top VK2 ALARA member
16	VK8AV	Alan	178	Top VK OM
17	VK3XB	Ivor	175	
18	VK4VR	Val	169	
19	ZL1BIZ	Elva	168	
20	VK4AOE	Margaret	167	
21	VK5AYD	David	165	
22	VK4ICU	Clayton	162	
23	VK3DVT	Valda	150	
24	VK3OZ	Pat	148	
25	VK3AEB	Erika	140	
26	VK7HD	Helene	129	Top VK7 ALARA member
27	ZL1WA	Alma	128	
28	VK3DYF	Bron	95	
29	ZL2AGX	Dawn	95	
30	VK6NKU	Peggy	80	Top VK6 ALARA member
31	VK6DE	Bev	58	
32	VK5AOV	Meg	56	
33	VK4MDG	Sally	55	
34	L40018	Charles	49	Top VK SWL
35	VK4KRR	Ted	44	
36	VK5ANW	Jenny	43	
37	VK3DXH	Lindsay	43	
38	VK7RY	Edgar	35	
39	JA8GTA	Yohko	28	Top Japan YL non-member
40	VK3ALD	Len	19	

41	VK4DRL	District Radio Ladies" Club station 308	
42	VK3ER	EMDRC Club station	43
43	VK4WIC	Dalby Radio Club station	39
44	VK3DMS	Marilyn Check log	

21	VK	ALARA members
5	DX	ALARA members
3	VK	non-member YLs
2	DX	YL non members
8	VK	OMs
1	DX	OM
1	SWL	
3	Club stations	44 logs in total

The hopes of everyone from last year for better conditions DID come true, though the QRM on 80 metres during the evening was pretty rough. I must thank everyone for having the logs in early. It does make life easier! Numbers are up again for this year, in fact the best since I became Contest Manager, which, of course, is directly attributable to the better conditions .

It is a pity that no-one has taken out the Florence McKenzie trophy this year. One person did have a go but did not hear any CW YLs.

Perhaps someone will take up the challenge next contest.

Congratulations go to the overall winner, Lyn, VK4DLS, and the top ALARA member, Nora, VK5NYD. It was great to see more OMs than ever.

We had an experimental section this year for Club stations, unfortunately not widely publicised as the decision was taken very late. While they were not able to qualify for a certificate this year, the Committee will be looking at how to include such stations in future contests. Three Club stations sent in logs, and at least one other was heard on the day. This interest bodes well for the future of the Contest.

Everyone seems to have enjoyed this year's Contest very much — I know I did. So let's hope for bigger and better things next November 13th, especially on CW!

33 and 73
Marilyn Syme VK3DMS
Contest Manager

Silent Key

It is with regret that ALARA notes the passing of their esteemed DX member, Ruth Lobb, ZL3PL.

Congratulations

Confirmation has been received that ALARA DX member, Aola Johnston, ZL1ALE, is the first ZL YL to gain a place on the ARRL Honor Roll.

33
ar

DICK SMITH ELECTRONICS

New Year Clearance Specials

FT-411E 2m DELUXE HAND HELD

Proven performance, ease of use and great value for money have been the hallmarks of the FT-411e 2m handheld for many years now. But with new models coming soon, we're clearing our stocks of new and ex-demo FT-411Es to make room for the new arrivals. So rush in and pick up a bargain, while stocks last!

- 144 to 148MHz transceive operation, with enhanced receiver performance
- Ultra long life 1000mAH 7.2V NiCad battery pack (supplied as standard!)
- 2.5 watts RF output as standard, 5 watts with 12V DC (or optional FNB-11 NiCad)
- Better than 0.16uV (12dB SINAD) sensitivity
- Programmable power saver (stand-by current only 7mA with 1 sec save)
- Keypad or dial frequency entry, with selectable tuning steps
- 49 tuneable memories which store repeater offsets
- Band, memory, priority or limited-band scanning
- Just 55 x 155 x 32mm
- Carry case, belt clip, carry strap and approved AC charger supplied

Cat D-3350

Save $30 **$449**

(Even less for ex-demo units)

2 Year Warranty

HURRY, STRICTLY LIMITED STOCKS

FT-650 6m,10m,12m 100W TRANSCEIVER

SAVE $100!

Now's the time to enjoy the summer DX season on the 6m and 10m bands, and the Yaesu FT-650 mobile transceiver allows you to do it in style. It's all-mode operation, 100W RF output (SSB, FM, CW), and continuous 24.5 to 56MHz receiver coverage allows you to hear signals outside the Amateur bands, so you can track the rising M.U.F and work stations as soon as the band opens. The use of 3 D.D.S.'s and a 2-stage low noise RF pre-amp results in a very quiet and sensitive receiver (SSB/CW, 0.125uV) so you'll hear weak signals much more easily. To cater for the FM enthusiast, the FT-650 provides repeater offsets, on FM narrow mode as well as exceptional 0.16uV (12dB SINAD) sensitivity. Other features include selectable tuning steps, manual/auto IF notch filter, RF speech processor, IF shift control, 105 scannable memories and an effective noise blanker. Includes MH-1 hand microphone.

Cat D-3250

2 Year Warranty

Our Best Ever Price! $1895

FT-990 H.F ALL-MODE BASE TRANSCEIVER

The FT-990 offers many of the advanced features of the legendary FT-1000, yet in a more compact and economical base-station package. Its excellent front-panel layout, together with clear labelling, a large back-lit meter and an uncluttered digital display provides very straightforward operation. The receiver performance is excellent, with a wide dynamic range front-end circuit and two DDS's providing a very low noise level and excellent sensitivity over the 100kHz to 30MHz range. Transmitter output is 100W on all HF Amateur bands (SSB, CW, FM) with the internal AC power supply allowing high duty cycle transmissions. An internal auto antenna tuner with 39 memories is a standard feature, while the customizable RF speech processor and Switched Capacitance Audio filtering facilities are unique to the FT-990. Other features include IF Shift and IF Notch, IF bandwidth selection, an effective adjustable notch filter, 500Hz B/W CW filter, 90 memories and one-touch band selection. Microphone optional extra.

2 Year Warranty

AC version FT-990 Cat D-3260 **$3495**

DC version FT-990 (upgradeable to AC version) Cat D-3255 **$3195**

~ B1451/MS

YOUR ANTENNA SUPERMARKET

We carry a wide range of antennas and accessories. Here are just a few...

HUSTLER RX-2 2m ⅝ WAVE MOBILE

Here's value! A quality American 2m ⅝ wave magnetic mount antenna for mobile or temporary base station use. Comes complete with 4.5m of coax cable with a PL259 attached. It provides 3dB gain with a power rating of 100W maximum, and uses a flexible stainless steel whip to minimise wind loading.

Cat D-4805 **$49.95**

HUSTLER ¼ WAVE MAGNETIC ANTENNA

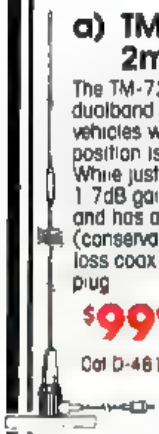
HUSTLER

A great idea for extending the range of handheld transceivers! The Hustler UGM is a compact ¼ wave magnetic mount mobile antenna supplied with 2.1m of mini coax fitted with a BNC plug. Simply use the supplied frequency chart to cut the flexible stainless steel whip to the required length for your application (within the 140-500MHz range) and it's ready to use.

Cat D-4802 **$39.95**

DUALBAND MOBILE ANTENNAS

Our exclusive range of Brainer 2m/70cm antennas provide excellent performance at a reasonable price. They feature quality Japanese construction and come complete with detailed, locally written instruction sheets so you can get the best from your mobile station.



a) TM-723m MAGNETIC 2m/70cm ANTENNA

The TM-723m is a compact, slimline dualband mobile antenna ideally suited to vehicles where a permanent mounting position is not available (eg. a company car). While just 0.7m long, the TM-723m provides 1.7dB gain on 2m and 4.7dB gain on 70cm and has a maximum power rating of 50W (conservative). Supplied complete with low loss coax cable fitted with a moulded PL-259 plug.

$99.95 Cat D-4812

New for '93

BRAINER

b) ST-7500 2m/70cm ANTENNA

The ST-7500 is a compact, medium gain dualband antenna that provides good performance when gutter or roof mounted. It's just 1m long, provides 3dB gain on 2m and 5.5dB gain on 70cm and has a maximum power rating of 150W. A quality tapered stainless steel whip element and an inbuilt hit-over mechanism make the ST-7500 ideal for use on vehicles that often have to enter garages or carparks. Requires an SO-239 antenna base (D-4035 or D-4052 recommended), or SO-239 magnetic mount (D-4520).

BRAINER **$79.95** Cat D-4810

c) ST-7800 DELUXE 2m/70cm ANTENNA

Our best dualband mobile antenna! The ST-7800 is ideal for long range mobile operation, providing high gain (4.5dB on 2m, 7.2dB on 70cm) from its 1.5m length. Like the ST-7500, it incorporates an inbuilt tilt-over mechanism to allow laying the antenna over when entering carparks, and it can either be gutter or roof-mounted with good results. With its high gain and 150W power rating the ST-7800 can also be used successfully as a temporary base station antenna. Requires an SO-239 antenna base (D-4035 or D-4052 recommended).

BRAINER Cat D-4815 **$129.95**

REVEX SWR/PWR METERS

Revex meters feature quality Japanese construction, large meter movements and low-loss wideband SWR/PWR sensors. We carry 2 of their popular models, the W502 and the W540, each of which provide 3 power reading scales plus SWR measurement, but with differing frequency coverage.

W502 HF/6M METER

Covers 1.8 - 60MHz and has an accurate P.E.P. metering circuit. As well, it has 20W, 200W and 2kW scales and a backlit meter. Requires 13.8V DC.

Cat D-1360 **$239**

W540 VHF/UHF METER

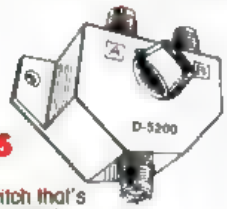
Covers 140 - 525MHz and has an average-reading metering circuit. It has 4W, 20W and 200W scales. Requires no DC power.

Cat D-1370 **$199**

Great Price!

2 POSITION COAX SWITCH

Cat D-5200 **$39.95**



A heavy duty, 2 way coax switch that's suitable for Amateur, or commercial applications. It's well constructed with a die-cast case and can handle up to 2kw PEP or 1kW CW at 30MHz with less than 0.2dB insertion loss.

YAESU SP-4 EXTENSION SPEAKER

$39.95

This quality speaker has a built-in switchable noise filter and comes with a swing mounting bracket. It handles 3W at 8 ohms and looks smart alongside any RF rig. Comes complete with lead and 3.5mm mono plug.

Cat D-2300

New for '93

With Surge Protection

4-WAY COAX SWITCH

$89.95

A high quality 4-way coax switch featuring rugged die-cast aluminium construction, 2kW P.E.P. (max.) power handling at 30MHz and only 0.3dB insertion loss. It has an in-built surge suppressor and automatic grounding of all un-used connections. In conjunction with a 'ground' post on the switch, it helps protect against lightning induced surge damage.

Cat D-5204

RUGGED HUSTLER HF 5-BAND TRAP VERTICAL ANTENNA

The tradit on cont nues! The 5BTV is yet another masterp ece from the people who have been making antennas for over 33 years. This rugged 5 band HF trap vertical uses Hustler's exclusive trap design (25mm solid fibreglass formers, high tolerance trap covers and low loss windings), for accurate trap resonance with 1kw(PEP) power handling. Wideband coverage is provided on the 10, 15, 20 and 40m bands (SWR typically 1 1.5 1 at resonance, less than 2 1 SWR at band edges), with 80kHz bandwidth typical on 80m at less then 2 1 SWR. An optional 30m resonator kit can also be installed without affecting operation of the other bands.

High strength aluminium tubing and a 4mm (wall th ckness) extra heavy-duty base section provides opt mum mechan cal stab l ty. What's more, stainless steel clamps and hardware guarantee a longer life. At just 7.65m the 5BTV can be ground mounted (with or without radials although radia s are recommended) or it can be mounted in an elevated posit on with a radial system. Unlike other antenna designs the 5BTV can be fed with any length of 50 ohm coax cable.

Cat D 4920

Hurry, last chance at the old price!

$299

Made in USA

30m RESONATOR KIT

Adds 30m coverage and includes all hardware.

Cat D 4921

$89.95

VRK-1 RADIAL KIT

Provides a 5-band ground-plane for above ground antenna mounting positions.

Cat D 4922

$69.95

DIAMOND D-130J DISCONE ANTENNA

This quality Japanese discone antenna covers the frequency range 25-1300MHz and is easy to assemble and install. With extens.ve aluminium and stainless steel construction it's extremely durable, while a lowing transmission on the 6m, 2m, 70cm and 23cm bands with a maximum power rating of 200W PEP. Complete with most mounting hardware, stainless steel U-bo ts and instruct ons.

Cat D 4840

$169

VHF/UHF BASE STATION ANTENNAS

We carry a wide selection of high quality vertically polarised base station antennas to suit most VHF/UHF Amateur applications. Each antenna was chosen based on its tested performance, reliability, construction quality and value for money, so you can be confident they'll work well the first time and last for years. Brands supported include Diamond and Brainer from Japan, as well as an excellent Australian made Mobile One product.

a) HIGH PERFORMANCE VHF/UHF BASE STATION ANTENNAS

These antennas from Diamond and Brainer are all of a stacked colinear type which provide high gain, wide bandwidth and a low radiation angle for extended range base station operation. Each antenna uses a jointed F.R.P. (fibreglass reinforced polyester) outer tubing radome with gasket seals to ensure excellent all weather operation, and is supplied with compact ground-plane radials for a clean radiation pattern. Corrosion resistant stainless steel mounting hardware is also supplied. Brainer antennas are exclusive to Dick Smith Electronics and feature detailed locally written instruction sheets. Both brands are covered by a 1 year warranty.

2m ANTENNA F-23A

Frequency	144-148MHz
Gain	7.8dB
Max Power	200W
Length	4.53m
Type	3 x ⅝ λ colinear
Connector	SO-239

Cat D 4850

DIAMOND

$239

2m/70cm ANTENNA GST-1

Frequency	144-148MHz, 430-440MHz
Gain	6.0dB(2m), 8.0dB (70cm)
Max Pwr	200W
Length	2.6m
Type	2 x ⅝ λ colinear (2m), 4 x ⅝ λ colinear (70cm)

Cat D 4830

BRAINER

$199

23cm ANTENNA F-1230A

Frequency	1260-1300MHz
Gain	13.5dBi
Max Power	100W
Length	3.06m
Type	25 x ½ λ colinear
Connector	N-type

Cat D-4870

$299

2m/70cm ANTENNA GST-3

Frequency	144-148MHz, 430-440MHz
Gain	7.9dB (2m), 11.7dB (70cm)
Max Power	200W
Length	4.4m
Type	3 x ⅝ λ colinear (2m), 7 x ⅝ λ colinear (70cm)
Connector	SO-239

Cat D 4835

BRAINER

$279

b) ECONOMY 2m BASE STATION ANTENNA

An outstanding value-for-money, compact ½ wave Australian-made 2m base station antenna which is only 1.69m long. It uses a s ngle section F.R.P. radome for excellent all-weather operation and covers 144-148MHz with less than 1.5 1 SWR. The antenna provides approximately 3dB gain with a maximum power handling of 200W FM. It's fitted with an SO-239 socket mounted into the base for easy coax connection.

Cat D 4820

5 Year Warranty

$49.95

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B 1440

QSLs from the WIA Collection

Ken Matchett VK3TL Hon Curator WIA QSL Collection
4 Sunrise Hill Road, Montrose, Vic 3765 Ph: (03) 728 5350

Navy — the Senior Service — Part 1

Particularly for the past 40 or so years, several radio amateurs have been displaying their other interests on their QSL cards. So common has this practice become, especially in recent times, that the WIA collection has developed a fine thematic card collection. One's interest in the armed services and merchant navies can be seen in the QSL cards of many nations.

GB5RN

The Royal Navy Amateur Radio Society (RNARS) had its origins in England in 1960 with the purpose of gathering together all radio amateurs who had any connection with the Navy or its allied services. The GB5RN card is a special event QSL showing the flagship of the RNARS, the HMS Belfast, moored on the River Thames between Tower Bridge and London Bridge. The special QSL commemorated 50 years of HMS Belfast, launched in 1938 by Mrs Chamberlain, wife of the then Prime Minister. The ship had a distinguished history serving in the North Atlantic and on Russian convoys, later taking part in the Korean War. Finally she was opened to the public as a maritime museum on Trafalgar Day 1971. The RNARS has been associated with the ship since 1973, when interested RNARS members set upon the task of restoring the ship's wireless room.

G4HMS

As well as GB5RN, the collection also holds a number of especially allotted QSLs associated with the RNARS. These include G4HMS and GB2RN, the two permanent station calls of the HMS Belfast; GB3RN, the HQ station of the RNARS; and GB4RN, which station celebrated the 21st anniversary of the Society. The HQ station is located on HMS Mercury at Petersfield, England. Three other special QSLs are GB0BRN, located at Huddersfield, which station celebrated the Silver Jubilee 1960-1985 of the RNARS. The card GB75MN was a special issue QSL commemorating the role of the Merchant Navy, and GB50RC a special card celebrating the 50th anniversary of Russian convoys. The first Russian convoy ship, "Dervish", left Scapa Flow on 21 August 1941 and, until the war's end, considerable losses were experienced, including 21 allied warships and 100 merchant ships lost.

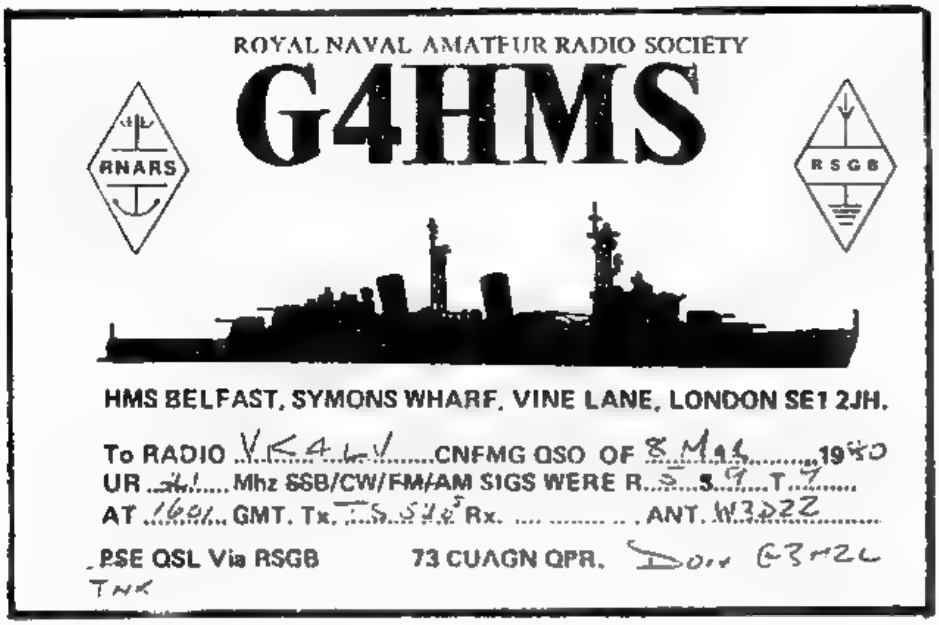
The membership of the RNARS has been extended, being open to Merchant and Reserve Navy personnel, civilians employed by Commonwealth Navies, Royal Marines as well as to Sea Cadets and women of the WRNS. In recent years, membership has been extended to Navy personnel of former enemy countries, all with the common bond of having served at sea. There are over 3000 members of the RNARS worldwide. Every member of the RNARS is allocated a membership number which is proudly displayed on their QSL card. Most DXers would have received amongst their QSLs several such cards, many of which attractively depict one of the ships of the Royal Navy. A little less common are the QSLs of members of the Submarine Amateur Radio Club, which is affiliated with the RNARS.

VK3RAN

The Royal Australian Navy was born on 1 March 1901, when the ships and personnel of the separate States' navies were placed under the control of the Federal Government formed only two months before. It was in July 1911 that King George V approved the designation "Royal Australian Navy". At the same time it was decreed that all Australian naval vessels were to be prefixed with the words "His Majesty's Australian Ship (HMAS)". In December 1978 the isolated members of the RNARS who had taken up residence in Australia got together and resolved to form an Australian branch of the Society. This was established in October 1979. A radio net was arranged and interest grew, especially when it was made known that membership was open to serving and former RAN and Australian Merchant Navy personnel as well as to former RN members. Membership in Australia now exceeds 150.

Just as RNARS members had restored the bridge wireless office on board HMS Belfast, members of the Australian branch of the RNARS in February 1980 accepted the challenge of carrying out a similar project on board the HMAS Castlemaine, which had been handed over by the Australian Navy in 1974 to the Maritime Trust of Australia. Originally allocated the station call VK3BZU, the special call VK3RAN was later granted by the Minister of Posts and Telecommunications. The VK3RAN QSL shows the HMAS Castlemaine which has become the flagship of the Australian branch of the RNARS. The ship is presently moored at Gem Pier, Williamstown, Victoria.

A fuller account of the establishment of the Australian branch of the RNARS (recently evolved as "RNARS Australia") and the story of station VK3RAN is to be found in the article entitled "The Royal Navy Amateur Radio Society, Past, Present, Future" by the then Australian branch manager, Terry Clarke VK2ALG in the December 1980 edition of AR. The author would like to acknowledge the information on the RAN and the RNARS forwarded to him by the Department of Defence and VK2ALG respectively. Interested readers should be aware of the daily "Navy Net" on 7090kHz at 1400 local time. Information can be obtained by writing to the Secretary, RNARS Australia, 1 Burnbank Grove, Athelstone Park, SA 5076, or to the follow-



ing committee members: VK1DD, VK2ALG, VK2CWS, VK3QU, VK4CY, VK5ADE and VK6UA — all QTHR.

— to be continued

Author's note

As an interested reader of this series of articles on the story behind QSL cards, would you like to add your name to the hundreds of other amateurs who have contributed cards to the collection? All donations are acknowledged personally as well as being recorded in this column. Please contact the author who is also the honorary curator of the collection. Arrangements can be made for the delivery of sizeable donations. Please help in this worthwhile project.

Thanks

The WIA (Vic Div) would like to express its thanks to the following for their generous donations of QSL cards: (supplementary list)

Peter VK3CFA
Frank VK2QL
Mike VK6HD
Terry VK2ALG
Ossie VK3AHK
Brian VK2MQ
Jim VK9NS (Norfolk Is)

Also to the family and friends of the following "Silent Keys" (supplementary list)

Bill Wallace VK4KHZ (courtesy of Joan VK4BJE)
Lin Rhodes VK2IB (courtesy of Rolly VK2GFO)

Repeater Link

Will McGhie, VK6UU Waterloo Cr Lesmurdie 6076 VK6UU @ VK6BBS

Among the many problems that occur at a remote repeater site, solar or wind powered sites have the highest potential for failure. If the supply of electrical energy fails, or is inadequate, then eventually the on site battery goes flat. How your repeater handles this situation can be embarrassing.

The repeater receiver may fail with the mute open due to low battery voltage. This then turns the repeater transmitter on until the repeater control circuit times out. What if the control circuit fails as well, or the transmitter develops a problem ? The low voltage condition is one that should be part of your testing procedure.

Even if your repeater handles the on site batteries going flat, leaving the batteries connected to the repeater continues to discharge them even further. If the problem is not sorted out quickly many batteries can be destroyed.

The solution is to install a low voltage sensor that disconnects the load from the battery. However if the problem on site is a lack of sun or wind, then once the batteries have received a charge the sensor should apply power to the repeater again.

The circuit shown does this. The NE 555 is used as a sensor to detect a low voltage condition and disconnect the load. Once the battery voltage rises to a charged condition, the load is re-connected. Of course if the battery is not re-charged due to a fault with the power source, then the load remains isolated.

The off and on level is set by VR1 and VR2. Setting up these pots can be confusing, so I have included voltage levels to set pins 2 and 6 to. With the voltages shown, the sensor switches off at 11 volts and on at 13 volts. Set these voltages with a supply voltage of 12.5 volts, as they vary with supply voltage.

The 2 μF capacitor is needed to force the circuit, on applying power to it, to turn on in the load connected mode. Without this capacitor, the sensor comes on in the load off mode, if the battery voltage is below 13 volts.

However the real strong point of this design is the current switching capacity. With the single 2SJ174 power MOSFET shown, up to a 20 amp load can be isolated. That's right 20 amps. The P channel power MOSFET has an on resistance of 0.07 ohms! This means that for a 1 amp load the voltage drop would be 0.07 of a volt. For a typical repeater system of say 5 amps, this means 0.35 of a volt drop. If this volt drop is too high then you can parallel as many 2SJ174's as you like. Four of these power MOSFET's in parallel would have an on resistance of 0.0175 of an ohm. Paralleling means just that, gate to gate, drain to drain, and source to source.

A mechanical relay would be a liability in such a design as it must draw current with the load connected. At remote sites every mA adds up. With a 5 amp load very little heat sinking is needed, as the power MOSFET is only dissipating 1 75 watts. I found 5 cm by 2 cm was enough. With two power MOSFET's in parallel, no heat sinking for a 5 amp load would be required.

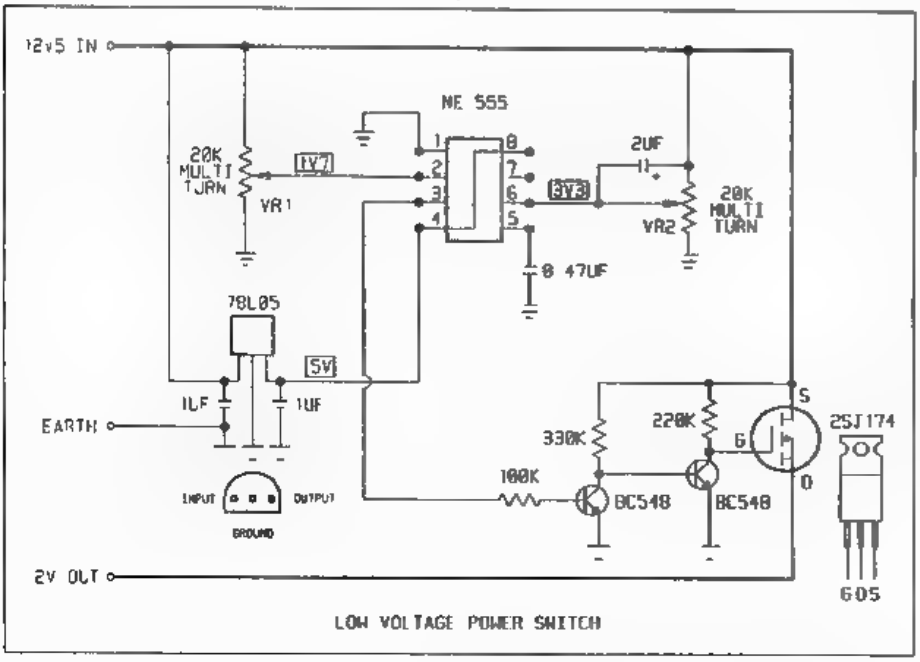
The two BC548 transistors are needed as the gate voltage must be supply rail (12V) for off, and 0 volts for on. As the NE 555 runs from a regulated 5 volt rail, the output is only 0 to 5 volts.

The circuit requires only 6 mA for the NE 555 version, and 4 mA for the NE 7555 CMOS version. Temperature variations had no effect on the switch off and switch on points.

Don't save costs by substituting ordinary trim pots for multi turn pots, as the preset voltages becomes too difficult to set.

P channel POWER MOSFETs are not as easy to find as N channel POWER MOSFETs, but they can be obtained from Farnell Electronic Components in Sydney, telephone (02) 645 8888. The price is around $7 each.

ar



LOW VOLTAGE POWER SWITCH

Spotlight on SWLing

Robin L. Harwood VK7RH 52 Connaught Crescent
West Launceston TAS 7250

The central European nation of Czechoslovakia ceased to be as of January 1st, splitting into two sovereign republics. The regions of Bohemia, Moravia and Silesia form the Czech Republic with Prague as its capital. Bratislava is the capital of the Republic of Slovakia. Two thirds of the Czechoslovakian population are in the Czech Republic and the remaining third are in Slovakia.

On the 31st of December, I monitored the final English broadcast of Radio Czechoslovakia International at 0700z and the programme was light-heartedly merry . The announcers stated that they had been fired, hoping that they were going to re-employed by the new management.The next day at 0700z I tuned into the same frequency but the callsign of the station had reverted to Radio Prague and the tone was somewhat sombre. Apart from a brief news bulletin, the 25 minute English programme gave a background briefing leading to the momentous events, reflecting the Czech position that it was the fault of the Slovaks that led to Czechoslovakia ceasing to exist.

I haven't heard the Slovak External Service yet on Shortwave but Radio Prague can be easily heard in English on 11990, 7345 or 9505 kHz at 0700z. It also states that it is on 15355 kHz plus the above channels at 1100z. It still uses the same Interval Signal as Radio Czechoslovakia International.

At the end of November 1992, a QSL card and program schedule from Radio Yugoslavia arrived here, some eight months after being posted in Belgrade. The surface mail delivery could have been the result of the UN sanctions and the cessation of direct air links between Australia and the former Yugoslavia.

Recently, I replied to a classified advertisement in the local daily newspaper for old valve radios. As I have an old Philips dual wave 5 valve set, I was curious to know if there is any interest in collecting old valve sets. And there is a healthy if not rather heated interest in these, with dealers in memorabilia on the lookout for old valve models to sell to interstate collectors. So if you have an old valve set tucked away in the attic, don't be too hasty to throw on the junk pile, as it may be worth something to a collector. I would recommend that you deal directly with a reputable collector or dealer, as there may be some with questionable practices.

The Philips model 2262 I have resurrected from the storeroom is circa 1938, and remarkably is still operational The tonal reproduction is quite good especially on medium wave. On shortwave, it performs quite well, despite its limited selectivity compared to that on the Icom R71 receiver. In fact, I found it indispensable when the phase locked loop on the Icom suddenly dropped out when I was making a recording of a special Christmas Day edition of "Letterbox", over the World Service of the Christian Science Monitor. I was interviewed on how Christmas is celebrated in Tasmania.

Well, that is all for this month. Until March, the very best of monitoring and 73 — Robin L. Harwood VK7RH. **ar**

Silent Keys

Due to increasing space demands obituaries should be no longer than 200 words.

The W1A regrets the passing of:

V W (Bill)	Bayliss	VK2BVW
R J (Robert)	Bleakley	VK2EB
M P	Edwards	VK2EFE
R R	Ross-Wilson	VK2FIT
H (Harry)	Hocking	VK2HH
G (Geoff)	Hughes	VK3AUX
J S (John)	Adkins	VK2ZBA
F N	Hymus	VK4AEV
S (Stan)	Tonkin	VK5SG
H M	Temby	VK5ZJ
B F (Basil)	Holman	VK6VB
F L	Powell	VK7FL

OBITUARY
Stan Tonkin VK5SG

Stan died peacefully on 3rd December 1992, aged 81.

For the last two years, he had lived at the Helping Hand Centre at North Adelaide, and passed away at the Adelaide Hospital.

He was active to the end maintaining regular skeds with his circle of friends.

Stan had a long and distinguished career in radio with AWA installing broadcasting stations in Australia and New Zealand, in addition to maintaining ships radio stations.

He was associated with the rocket program at Woomera, and was regarded by all as a very fine and quiet gentleman, as well as being a brilliant engineer who will be sadly missed.

Bob Clifton VK5QJ

Basil Holman VK6VB

7th April 1905 — 25th December 1992.

Born in England, but raised and educated in Beverly WA where he first dabbled with radio.

Basil served an apprenticeship as a fitter and turner with the State Engineering Works.

He worked throughout the wheat-belt finally arriving in Kalgoorlie, were he found work with the Tramways. He also studied for and received an "A" class welding certificate.

In 1939 he purchased and studied the necessary books to obtain an "A" grade electrician's licence.

In 1949 he moved to the mining sector as a foreman electrician, a job he held till 1954.

His very active mind and manual skills enabled him to make many things from radios to a steam engine for his car.

Keen fishermen are grateful to him for the invention and manufacture of the "Holman Cliff Gaff" that allowed them to bring home the big ones.

At the age of 75, Basil taught himself CW with the aid of a Datong morse trainer, and he sat for and gained his amateur licence. From the day he received his licence he held regular bi-weekly skeds with Wally ZS6WE in South Africa, a true friend, whom he met and stayed with on several occasions.

Basil, a great family man will be sadly missed by all who knew him.

Ron Law VK6RL

ar

Stolen Equipment

Stolen from a motor vehicle on 16th December 1992:

ICOM IC 735 Transceiver S/N 020254, with mounting bracket and mic, YAESU SP4 extension speaker, WELZ SWR/Power meter

Details to Brian Woods VK2AZI, 21 Careebong Road, Frenchs Forest 2086

Stolen from Dick Smith Electronics, YAESU FT470 VHF/UHF Dual Band FM Handie Transceiver, Serial No 1 K 430817. Contact George Alexandrakis, Area Manager, Dick Smith Electronics, 656 Bridge Road, Richmond Vic 3121 Tel (03) 428 1614.

ar

Divisional Notes

VK2 Notes

Tim Mills VK2ZTM

Annual General Meeting

As detailed in the Articles of Association for the WIA NSW Division, members are advised that the 1992/93 AGM for the Division has been scheduled for Sunday afternoon 2 May 1993 at Amateur Radio House, 109 Wigram St, Parramatta NSW.

The formal notice and reports will be given in the separate insert with the April Amateur Radio delivery.

Members are advised that agenda items and other matters for inclusion in the meeting business paper must be received by the secretary at the registered office of the Division, 109 Wigram St, Parramatta by 2pm on Wednesday 17 March 1993.

Nominations are also called from full members of the WIA NSW Division to serve on the 1993/94 Divisional Council. Nominees must be proposed and seconded by full members of the Division. (Forms are available from the office). These nominations must also be received by the secretary at the registered office, 109 Wigram St, Parramatta NSW by 2pm on Wednesday 17 March 1993.

The Divisional Council consists of nine members who, upon election, become directors of the Division — a company registered in the State of New South Wales, as required by the respective Companies Acts etc.

Should more than the required number (nine) be received by the close of nomination, a ballot will be conducted.

Divisional happenings

Divisional membership promotion. See the notes in January AR; this is the last month.

The current Australian Callbook has been selling well, but don't delay if you want a copy. The Divisional Bookshop still has a couple of copies of the now out-of-print RSGB RTTY Handbook on the shelves. Mainly covers the days of the mechanical machines. Anyone out there interested? Contact the office via the methods shown on page 3.

Divisional classes for 1993 have just started Monday nights in the library at Parramatta; ring or call in for details. Remember, the Division also has the correspondence course available to anyone unable to get to Divisional or Club classes. The Gladesville ARC has courses available on video tape; the office can give you details.

The first exam at Parramatta for the year is Sunday 21 February, with a close-off date of 4 February. The next exam is in May.

The Hunter Branch Monday evening broadcast at 7.30pm resumes 8 February when you can catch a summary of the VK2WI Sunday sessions.

VK2WI news can also be found on the various packet and electronic systems. For voice highlights, telephone (02) 552 5188.

The next Parramatta located Trash & Treasure is 28 March 1993.

The committee formed from last year's Packet forum is to meet this month. Some upgrading of the VK2RWI packet system has been carried out recently.

There was a good turn-up to the end-of-year broadcast barbecue, which prompts the question: is there any interest in re-starting the monthly Dural barbecues?

VK4 Notes

From the WIAQ Minutes Summary of the meeting held on 3rd December 1992 supplied by Ken Ayers VK4KD, WIAQ Division Hon Secretary, and compiled by VK3UV.

John Aarse VK4QA presided. Matters discussed in committee were News Broadcasts and examination issues.

IARU Region 1

A written request has been made from IARU Region 1 to supply details of the Australian Standards and Regulations for the Amateur Service.

Tower Dispute

It has been reported that a Tower Dispute exists with the Rockhampton City Council.

QTC Insert

Due to late deliveries by Australia Post, resulting in many members not receiving the insert, alternative arrangements are being made for the inserts to be transferred to the Melbourne mailing house.

Examinations

A proposal for monthly examinations in the Brisbane/Coastal area is being investigated. It is generally considered that regular monthly exams, properly advertised, would benefit everyone. More on this later.

Slow Morse

Sunshine Coast Amateur Radio club has been granted permission for the club call sign VK4WIS to be used on a roster basis by Slow Morse Stations.

UHF Repeaters

70 cm repeaters for the Monto and Bundaberg areas are currently being considered by the QTAC.

General

The Divisional Council is concerned about a retailer advertising amateur equipment without the customary warning that it is unlawful to operate same unless the operator holds the appropriate licence. The matter is being watched.

Bert Hinkler Centenary

The WIAQ commemorated this important centenary by having a special broadcast on 14 160 MHz at 0730Z on 6th December 1992. The mayor of Bundaberg (where Hinkler was born) spoke from Bob Millgate's station (VK4ADZ) to the RAF Aircraft Museum at Hendon UK (G0SJR), the RSGB HQ GB3RS, near London. Also in the world wide hook-up was the president of the Queensland Aero Club Museum in the Hinkler room at Archerfield. This station was set up by Laurie Pritchard VK4BLE. Other stations involved were VK4LC, VK4KD, GX3GXI Eccles Club, Manchester, G3VUH and G4TLY both relay stations.

Greetings were sent from the WIAQ to the RSGB.

Gosford Field Day

Visit the various Divisional stands while you are there on Sunday 28 February. Note the new venue this year of the Wyong Racecourse. Note that for this weekend the Sunday morning VK2WI broadcast is conducted Saturday evening; the tape at 1745 and the news at 1800 local.

New members A warm welcome is extended to the following who joined the NSW Division last December.

JP	(Peter)	Bulanyi	VK2GVO	Dorrigo
HKJ	(Hans)	Goldhofer	VK2GOL	Randwick
FA	(Fred)	Gubbins	Assoc	Coffs Harbour
RT	(Robert)	Heaton	Assoc	Dee Why
A	(Aiden)	Kavanagh	Assoc	Merrylands
C	(Clive)	Luckman	VK2GUX	Queanbeyan
F	(Frank)	Mike	VK2DHM	Fishing Point
S	(Shane)	Norman	Assoc	Sylvania
MJA	(Matt)	Ryan	Assoc	Coogee
D	(David)	Thomas	Assoc	Sydney
P	(Paul)	Titze	Assoc	Granville

5/8 Wave

Jennifer Warrington VK5ANW

Well, I bet you were surprised to see my name at the top of this column again, but no more than I was when Bob Allan VK5BJA rang to ask if I could fill in for this month. My first reaction was "what on earth can I write?" I have got rather out of touch over the past few months.

The pottery classes I have been attending were on Tuesday nights, which has meant I have not attended any WIA meetings since about August. Also, the arrival of our four-year-old grandson on alternate Sundays, prior to the start of the broadcast, means I don't always hear it, even though it is on. However, I have managed to catch up with a few people in that time and know a bit of what has been going on.

What looked like a new and exciting Council line-up in April seemed to slowly disintegrate in the following months. First, John Highman VK5PJH had to leave to become a VK2, just as he was coming to grips with the secretary's job. Then Mark VK5AVQ decided our wet winter was just too much, so he left to spend some time with the penguins! Chuck VK5CQ also resigned, and so the remaining members of council struggled along as best they could, trying to keep the wheels turning.

Rowland VK5OU, who had already agreed to take over this column and the minutes secretary's job, suddenly found he was the correspondence secretary also. Anyway, I am pleased to announce there is light at the end of the tunnel. Maurie Hooper VK5EA and Garry Herden VK5ZK have both volunteered to go on council. My information was that Maurie would possibly be secretary, but I also read in the last journal that he may be our new journal editor, so who knows, maybe he'll do both!

Whatever either of them does, I know they will do it very diligently, and that it will be greatly appreciated by the other members of council. I also understand the education/membership/examinations portfolio has been taken care of, but that's all the information I have. I do know the position of program organiser is still vacant, so if you think you could help, do speak to a member of council.

This is probably a good time to remind everyone that nomination forms for the AGM in April are now available. If you haven't got one, again, PLEASE contact a member of council; there are still vacancies, and wouldn't it be a nice change to actually have to vote for a council this year?

I am still working on the photographs of our past presidents. A couple of months ago I wrote to the nine for whom I do not have photographs. My thanks to Les Diener VK5NJ and Don McDonald VK5ADD for theirs, and to Ian Hunt VK5QX and John Haseldine VK5BD, who have promised theirs. I'm still hoping to hear from the rest!

Wishing you all a happy, healthy and fulfilling 1993.

VK7 Notes

E A Beard
VK7 Divisional Secretary

VK7 Annual General Meeting

All members please note the Annual General Meeting of the VK7 Division shall be held at the registered office of the Institute, 105 New Town Road on 27 March 1993, commencing at 2pm.

All Notices of Motion for the AGM must be received by the secretary not less than 28 days prior to the meeting, and must be signed by at least three currently financial members.

Nominations of candidates for elections to the Divisional Council must be received by the secretary, in writing, not less than 21 days before the AGM.

Not less than 10 days before the AGM, should an election be necessary, a ballot paper shall be posted to each member of the Institute, which is to be returned to the secretary prior to the commencement of the AGM.

Proxies are to be deposited at the registered office of the Institute, 105 New Town Road, Hobart, at least 24 hours before the time appointed for the meeting.

All of the above items are in accordance with the Articles of Association.

IARUMS — Intruder Watch

Gordon Loveday VK4KAL Federal Intruder Watch Co-ordinator
Freepost No 4 Rubyvale Qld 4702 or VK4KAL@VK4UN-1

The International Amateur Radio Union Monitoring System (IARUMS) is set up to record, report, and encourage the removal of non-amateur stations from amateur band allocations. Stations targeted are usually broadcast or commercial stations from other countries. Priority is not given to local "pirates". Each country appoints a Co-ordinator, who is responsible for collating reports and forwarding them to the appropriate regulatory authorities (DoTC in Australia).

Each WIA Division, apart from VK3, has a Divisional Co-ordinator to collect reports from that Division and forward them to the Federal Intruder Watch Co-ordinator. But the main strength of the service is in the individual amateurs who spend time regularly listening on the bands and identifying types of signals and stations.

More Intruder Watch listeners are always required. Volunteers who contact either their Divisional Co-ordinators or me direct will be supplied with information, log sheets and tapes to assist in identifying modes.

Simplified Intruder Watching

Please read the following, it applies to all amateur bands and all intruders.

WIA members seem very loath to act as IW Observers, and one suggestion put forward amounts to this — instead of members taking on "official observer" status, they be more free and not obligated by that status. The idea is that members keep alongside them on their operating desk a copy of the Observer Log Sheet.

In listening around the bands, or in normal operating, when an intruder is heard an appropriate entry would be made on the form, and at the end of each month the sheet/s would be forwarded to your Divisional Co-ordinator (see below).

From your standpoint this would take the onus of being "official" off your shoulders, and I urge ALL members to start NOW to stimulate more activity in intruder watching to make it the success it should be.

The Intruder Watch Service works in this way: Say, for instance, on some occasions your favourite net or frequency is subjected to harmful interference from a non-amateur transmission and you want to do something about it. You note the occurrence on the observer's log sheet, making as many observations as you can on different days, then at the end of the month you forward the sheet/s to your co-ordinator Many reports will bring results, BUT not just an isolated report. So get all the participants on the net also to send in their findings. Thus, after a while, you will be used to doing this, and many reports will be received and some action taken. Identifications are essential to get action taken. Although identifications are desirable, what you hear without an ID could be most useful to tie in with somebody else who has text and nothing else. By being alert to intruders when operating, I am sure will make your listening much more interesting, and shortwave listeners, so long as their equipment is accurate, can participate. Be enthusiastic; note ALL infringements you hear, and send in your sheets monthly. They will be

much appreciated and will be used to condemn those countries which allow stations to intrude into our amateur bands. You will be doing a great service to amateur radio as a whole, and it will pay dividends.

Log sheets are available from the following co-ordinators: VK4BTW Tom Walker, 13 Bothwell St, Toowoomba 4350; VK5ZRH John Harris, 7 Prince Charles St, Morphett Vale 5162; VK6RO Graham Rogers, 22 Grace St, Ferndale 6155; VK7RH Robin Harwood, 52 Connaught Cres, West Launceston 7250.

Or from the Federal Co-ordinator at this address: **Freepost No 4, AG Loveday, Rubyvale 4702.** Observers in states having no co-ordinator should send their log sheets direct to this address.

Please keep log sheets beside you at all times.

My thanks to Alf VK3LC for the original text. Although slightly altered, it was good advice in 1978; it is even better today. **LT**

Over to You — Members' Opinions

All letters from members will be considered for publication, but must be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

What's In a Name?

"A rose by any other name would smell as sweet!", wrote William Shakespeare.

I have been following the correspondence about the Institute's name, and would ask you to add my name to the list of those who see no necessity for change.

WIA is the oldest National amateur radio organisation in the world, and dates several decades before the word "radio" became King's English, which was when King Edward VIII used it in one Christmas broadcast. "Wireless" is still in current use. United Kingdom Amateur Radio licences are issued under the "Wireless Telegraphy Act, 1949", and my copy of the Australian Dept of Communications pamphlet RB29 states, on page 1, "A Wireless Telegraphy Act licence is for the specific period shown...".

The word "Institute" is also a bit old fashioned, but there's no merit in becoming the "Radio Society of Australia". The acronym would clash with that of the Royal Society of Arts! Those wanting change might reflect that the present name is still more apposite these days than that of the United States of America counterpart.

WIA has a long and honourable history. Let its title reflect the facts.

E Arnold Matthews
G3FZW/ex VK4AUN
2 The Parchments
Lichfield
Staffordshire
WS13 7NA
ENGLAND

Do not Change Name

I would like to add my total support to the feelings expressed by Lloyd Butler, VK5BR, in respect to the name of the WIRELESS INSTITUTE OF AUSTRALIA, which appeared in the October 1992 issue of AR.

Murray Burford VK5ZQ
261 Belair Rd
Torrens Park SA 5062

Preferred Description

I am writing in response to the *WIA NEWS* item in this month's AR (Dec 1992, page 4) titled *"Amateur Radio in the Yellow Pages".*

This is certainly not before time, but may I suggest that newcomers to the hobby will be looking under Clubs, Radio rather that Clubs, Amateur.

Let's make it easy for people to find us. Those with little or no knowledge may even look under Clubs, Ham Radio.

I think we should look at ourselves from their point of view first of all.

Gareth Davey VK2ANF
12/18 Grafton Crescent
Dee Why NSW 2099

Mailing Costs

Noticing that my journal had been delivered by Streetfile, it occurred to look at the present value of the 3d letter rate postage in 1939 in today's money.

Assuming an average 3% inflation over the period, probably too low, possibly believable, letter rate postage comes out just under 12c.

But the airmail rate of, say, 35c, has been absorbed into the letter rate.

In present day terms of number of items handled, distances involved, and service time (typical), postal rates, though pricey, don't look expensive in terms of value for money from out here.

What's likely to be the 2nd Class Mail rate to Coonabarabran, or Booboorowie, or Queenstown, or .... when mail between capitals can go outside the system at, say, a cost-effective rate of 20c?

No thinking yet heard from either major side of politics to account for (or discount) this risk.

Ian Crompton VK5KIC
9 Craig St Richmond SA 5033

Abject Error recognised, change "AR" instead!

I have read with interest the letters in "Over to You" in response to my proposal last year that the WIA change its name to the Amateur Radio Institute of Australia.

Having read Lloyd Butler's poignant plea in the October 1992 issue, and Jeroen Vette's followup in the December issue, I am convinced to change my mind, as I have seen the abject error of my ways.

We should NOT change the name of the Wireless Institute of Australia!

However, under the principles espoused by the above-mentioned correspondents, to which I now subscribe, I propose that we must change the name of the WIA journal from "Amateur Radio" to "Amateur Wireless"!

After all, the commercial/professional community now refers to "wireless personal communications technology" and "wireless local area networks", so let us keep in step with the times!

Roger Harrison VK2ZTB
3/3 Rosemont Ave
WOOLLAHRA NSW 2025

WIA Divisional Bookshops

The following items are available from your Division's Bookshop
(see the WIA Division Directory on page 3 for the address of your Division)

	Ref	Price to Members
ANTENNAS		
Ant. Compendium Vol 2 Software 5.25 IBM Disk	BX293	$18.00
Antenna Collection — RSGB	BX391	$39.60
Antenna Compendium Vol 1 ARRL	BX353	$19.80
Antenna Compendium Vol 2 ARRL	BX292	$21.60
Antenna Impedance Matching — ARRL	BX257	$27.00
Antenna Note Book W1FB — ARRL	BX179	$18.00
Antenna Pattern Worksheets Pkt of 10	BX002	$2.70
Antennas 2nd ed John Kraus 1988	BX259	$63.00
Easy up Antennas	MFJ39	$35.30
G-QRP Antenna Handbook	BX452	$20.30
Novice Antenna Notebook DeMaw W1FB ARRL	BX192	$14.40
Physical Design of Yagi — 3.5" IBM Disk	BX388B	$18.00
Physical Design of Yagi — 3.5" Mac Disk Excel Format	BX388C	$18.00
Physical Design of Yagi 5.25 IBM Disk	BX388A	$18.00
Physical Design of Yagi Antennas — The Book	BX388	$36.00
Practical Antenna Handbook — Tab	BX026	$44.10
Practical Wire Antennas RSGB	BX298	$25.20
Reflections Software 5 inch disk	BX359	$18.00
Reflections Transmission Lines and Antennas — 5.25" IBM	BX348A	$18.00
Reflections Transmission Lines and Antennas — ARRL	BX348	$36.00
Simple Low Cost Wire Antennas	BX218	$23.00
Smith Chart Expanded Scale Pk of 10	BX903	$5.90
Smith Charts S/Scale 1 SET co-ord Impt/Admir Pack of 10	BX901	$5.90
Smith Charts Stand Scale 1 SET Co-or. Pk of 10	BX900	$5.80
The Antenna Handbook ARRL 1991 edition	BX370	$36.00
The Easy Wire Antenna Handbook	BX002	$18.00
Transmission Line Transformers — ARRL	BX329	$36.00
Vertical Antenna Handbook — Lee — 1990	BX284	$19.80
Yagi Antenna Design — ARRL	BX184	$27.00
[redacted]		
An Introduction Amateur TV	BX369	$18.00
The ATV Compendium — BATC	BX270	$15.80
The Best of CQ-TV volume 2	BX273	$15.80
CALL BOOKS		
Radio Call Book International 1993	BX398	$62.90
Radio Call Book North America 1993	BX399	$66.50
FICTION		
CQ Ghost Ship — ARRL	BX204	$9.50
Death Valley QTH — ARRL	BX205	$9.50
DX Brings Danger — ARRL	BX206	$9.50
Grand Canyon QSO — ARRL	BX207	$9.50
Murder By QRM — ARRL	BX208	$9.50
SOS At Midnight — ARRL	BX209	$9.50
HANDBOOKS		
ARRL Handbook — 1993	BX399	$47.80
Electronics Data Book — ARRL	BX201	$21.60
Mobile Radio Handbook	MFJ33	$22.50
Motorola RF Device Data — 2 volumes	$2.0	$32.00
Radio Communication Handbook — RSGB	BX266	$50.40
Radio Theory For Amateur Operators — Swainston — 1991	BX287	$43.20
Space Radio Handbook — GM4IHL — RSGB	BX439	$49.50
World Radio TV Handbook	BX450	$36.00
[redacted]		
200 Meters and Down 1936 — ARRL	BX196	$7.20
50 Years of the ARRL — 1981	BX196	$7.20
Big Ear — Autobiography Of John Kraus W8JK — 1976	BX263	$11.70
Bright Sparks of Radio — RSGB	BX364	$39.60
Dawn of Amateur Radio	BX395	$52.20
Golden Classics of Yesterday — Ingram	MFJ39	$18.40
Spark to Space — ARRL 75th Anniversary	BX310	$22.50
[redacted]		
Interference Handbook — Nelson — 1989	BX181	$23.00
Radio Frequency Interference — ARRL — 1992 Edition	BX196	$27.00
MISCELLANEOUS		
Amidon Ferrite Complete Data Book	BX044	$9.50
Design Note Book W1FB ARRL	BX357	$18.00
Ferrells Confidential Frequency Listing	BX397	$27.90
Ferromagnetic Core Design & Application Handbook	BX135	$69.30
First Steps in Radio Doug DeMaw W1FB	BX385	$10.80
G-QRP Circuit Handbook — G Dobbs — RSGB	BX441	$27.90
Ham Radio Communications Circuit Files	MFJ37	$22.50
Help For New Hams DeMaw — ARRL	BX308	$18.00
Hints and Kinks 13th edition — 1992 — ARRL	BX330	$16.20
National Educational Workshop 1991 ARRL	BX384	$21.60
Novice Notes, The Book — QST - ARRL	BX298	$10.80
QRP Classics ARRL — QST	BX323	$21.60
QRP Note Book DeMaw ARRL	BX170	$18.00
Radio Astronomy 2nd edition — John D Kraus — 1986	BX282	$71.90
Radio Auroras - RSGB	BX381	$27.00
Radio Buyers Source Book ARRL	BX377	$27.00
Shortwave Receivers Past and Present	BX253	$19.80
Solid State Design DeMaw — ARRL	BX171	$21.60
Vibroplex Collectors Guide	BX025	$31.50
MORSE CODE		
Advanced Morse Tutor — 3.5" Disk	BX328A	$36.00
Advanced Morse Tutor — 5.25" Disk	BX328	$36.00
Morse Code The Essential Language	BX223	$9.00
Morse Code for Radio Amateurs — RSGB	BX451	$14.40
Morse Code Tapes Set 1 5-10 WPM — ARRL	BX331	$16.70
Morse Code Tapes Set 2: 10-15 WPM ARRL	BX332	$16.70
Morse Code Tapes Set 3: 15-22 WPM — ARRL	BX333	$16.70
Morse Code Tapes Set 4: 13-14 WPM — ARRL	BX334	$16.70
Morse Tutor 3.5" IBM Disk	BX187A	$18.00
Morse Tutor 5.25" IBM Disk	BX187	$18.00
OPERATING		
Amateur Radio Awards Book — RSGB	BX297	$27.00
Amateur Techniques — G3VA - RSGB	BX393	$32.40
DXCC Companion How to Work Your First 100	BX345	$10.80
DXCC Country Listing — ARRL	BX395	$4.50
FCC Rule Book — A Guide to the FCC Regulations	BX379	$16.20
Locator Map of Europe RSGB	BX394	$5.40
Log Book — ARRL — 9" x 11" Wire Bound	BX202	$6.30
Low Band DXing — John [redacted]	BX195	$18.00
Operating Manual ARRL - 4th Edition	BX192	$32.40
Operating Manual - RSGB	BX359	$27.90
Passport to World Band Radio	BX348	$30.60
Prefix Map of North America	BX235	$7.20
Prefix Map of the World — RSGB (laminated)	BX397	$18.00
RTTY Today — a Guide to Amateur Radioteletype	BX003	$19.20
Short Wave Propagation Handbook	BX288	$19.20
The Complete DXer — W9KNI	BX194	$18.00
Transmitter Hunting	BX222	$38.70
World Grid Locator Atlas — (Maidenhead Locator) — ARRL	BX187	$9.00
PACKET RADIO		
AX.25 Link Layer Protocol — ARRL	BX178	$14.40
Gateway to Packet Radio 2nd edition — ARRL	BX189	$21.60
Packet Computer Networking Conference 1-4 1982/5	BX188	$32.40
Packet Computer Networking Conference No 10 1991 — ARRL	BX378	$22.50
Packet Computer Networking Conference No 5 1986 — ARRL	BX187	$18.00
Packet Computer Networking Conference No 6 1987 — ARRL	BX188	$18.00
Packet Computer Networking Conference No 7 1988 — ARRL	BX184	$22.50
Packet Computer Networking Conference No 8 1989 — ARRL	BX295	$18.00
Packet Radio Made Easy — Rogers	MFJ32	$15.50
Packet Radio Primer — G8UYZ — RSGB	BX440	$28.80
Packet Users Notebook — Rogers	BX285	$16.70
SATELLITES		
Oscar Satellite Review — Ingram — 1986	MFJ31	$15.30
Satellite AMSAT 5th Space Symposium — ARRL	BX152	$15.80
Satellite AMSAT 8th Space Symposium — ARRL	BX199	$15.80
Satellite AMSAT 9th Space Symposium — ARRL	BX483	$21.60
Satellite Anthology — 1992 Edition — ARRL	BX180	$18.00
Satellite Experimenters Handbook	BX177	$36.00
Space Almanac — ARRL	BX299	$46.00
Weather Satellite Handbook — ARRL	BX324	$36.00
Weather Satellite Handbook Software 5.25" IBM Disk	BX326	$18.00
VHF/UHF/MICROWAVE		
All About VHF Amateur Radio — Orr	BX216	$15.60
International VHF FM Guide — G3UNK — RSGB	BX309	$12.60
Microwave Handbook Vol 1 — RSGB	BX316	$34.20
Microwave Handbook Vol 2 — RSGB	BX437	$51.30
Microwave Handbook Vol 3 — RSGB	BX447	$51.30
Microwave Update Conference 1987 — ARRL	BX174	$15.60
Microwave Update Conference 1988 — ARRL	BX183	$15.60
Microwave Update Conference 1989 — ARRL	BX321	$21.60
Microwave Update Conference 1991 — ARRL	BX448	$21.60
Mid Atlantic VHF Con. October 1987 — ARRL	BX175	$15.70
Spread Spectrum Source Book — ARRL	BX385	$38.00
UHF Compendium Part 1 & 2 Vol 1	BX250	$67.50
UHF Compendium Part 3 & 4 Vol 2	BX251	$67.50
UHF Compendium Part 5 German Only	BX364	$56.30
UHF/Microwave Experimenters Manual — ARRL	BX326	$36.00
UHF/Microwave Experimenters Software — ARRL	BX327	$18.00
[redacted] 21st Central States Con 1987 ARRL	BX172	$15.70
VHF 23rd Central States Con 1989 — ARRL	BX268	$15.70
VHF 24th Central States Con 1990 — ARRL	BX322	$22.50
VHF 25th Central States Conference 1991 — ARRL	BX436	$22.50
VHF 26th Central States Conference 1992 — ARRL	BX448	$22.50
VHF West Coast Conference 1992	BX444	$22.50
VHF/UHF 18th Eastern Conference — ARRL	BX446	$22.50
VHF/UHF [redacted] — RSGB	BX267	$43.20
[redacted] **MEMBERS SUNDRIES**		
[redacted] Book Covers		$18.00
[redacted] Badge - Diamond		$4.00
[redacted] Badge — Diamond With Call Sign Space		$4.00
[redacted] Badge Traditional Blue		$4.00
[redacted] Badge — Traditional Red		$4.00
[redacted] Car Window Stickers		$0.50
[redacted] Sounds of Amateur Radio		$7.00
[redacted] **PUBLICATIONS**		
Australian Radio Amateur Call Book — 1993		$11.00
Band Plans Booklet		$2.80
WIA Log Book — Horizontal or Vertical Format		$5.00
WIA Novice Study Guide		$1.50

Not all above are available from all Divisions (and none is available from the Federal Office).
If the items are carried by your Divisional Bookshop, but are not in stock, your order will be taken and filled as soon as practicable.
All prices are for WIA members only — postage and packing, if applicable, is extra. (Phone for postal rates.)
All orders must be accompanied by a remittance.
The prices are correct as at the date of publication but, due to circumstances beyond the control of the WIA, may change without notice.

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Videotape Library

WIA Videotape Library
c/- Bob Godfrey VK4BOB
20 Buckra Street Brackenridge, QLD 4017
ph (07) 840 6750 (bus) — (07) 269 5380 (home).

Now every radio club can provide its members with quality technical lectures on subjects covering the whole range of Amateur Radio activities by taking advantage of the WIA Federal Videotape Library. You'll find this a boon particularly if yours is a country club which often has difficulty obtaining a variety of expert lecturers for its regular meetings. (Individual Amateurs and Librarians should take note of the duplication fees at the end of this article.)

For radio clubs affiliated with the WIA it's inexpensive and easy. Here's how it works. For those titles which the WIA has placed in the public domain, all you have to do is supply the WIA Video Co-ordinator (address above) with:
— a list of requested titles,
— a blank video cassette,
— a VCB Postpak ,
— and enclose your address and stamps for return postage.

The program is then free for your use in the support of Amateur Radio in your area, including duplication and transmission over Amateur Television if you wish.

Those programs which are copyright are indicated by the © symbol and are available only ON LOAN. To obtain any Loan Item supply the WIA Video Co-ordinator (address above) with:
— your requested title,
- information about your preferred VCR format,
- enclose your address and stamps for postage to you,
and a statement signed by a responsible member of your club that "I undertake that while (program title) is assigned to me, I will not allow it to be copied or transmitted by any means whatsoever, and that I will return the same promptly after showing".

Note: the WIA does not hold a licence from the copyright owners of certain titles; therefore no loan or copy service is available for those so marked; they are held for WIA Archive purposes only.

The present "preferred VCR format" is Standard Play VHS. For estimation of postage, a 3 hour VHS cassette measures 200x100x30mm and weighs 350gm.

New Air-Mail Postal Regulations. To avoid disappointment by lack of arrival of late-minute requests, this important change in Postal Regulations should be allowed for by Club Activity Organisers. All packages being sent by Airmail MUST now carry a declaration sticker certifying that the contents are not dangerous or prohibited. For items weighing less than 500 gm. (ie one VHS cassette) pink stickers are obtainable from any Post Office. Items weighing more than 500 gm can only be posted at an official Australia Post Office and a complete declaration of contents must be made. Any item not carrying the correct sticker will not be transported by air, regardless of whether the correct value of stamps for Air Mail have been affixed.

A note to individual amateurs. From the inception of the WIA Federal Video Service cassettes were freely available to all comers. However, in order to stem the rising tide of requests for copies of programs from individual amateurs (some of whom asked for over 10 hours of programs at a time) there is now a duplication fee (payable in advance) of $2 per hour or part thereof to individuals. Isolated or disadvantaged individual amateurs will however continue to receive free concession.

A note to librarians. A number of educational institutions have already availed themselves of the of the WIA technical lecture tapes. A duplication fee of $10 per hour or part there-of is payable in advance by all institutions not affiliated to the WIA.

Finally, a note regarding cassette quality. The WIA Videotape Co-ordinator reserves the right to refuse to copy onto inferior quality video tape. Video dubbing is a real-time, one-at-a-time operation and in the past low quality tape has been the cause of many lost hours due to clogged heads etc. Libel laws prevent publication of a list of manufactures of suspect tape, however most of the well known brand names are acceptable; in particular use only those tapes bearing the official "VHS" logo.

WIA Videotape Program Title Listing as of [illegible]

NOTE
"c" = Copyright; no copy service
"o" = Optically Converted to PAL from NTSC by WB2LLB; noticeable flicker.
"w" = available ONLY to Radio Clubs Affiliated with the WIA as per agreement with OTC
"o" = program now out of date
Standard Format: "VHS" Standard Play.

Support the WIA in order to protect amateur radio frequencies

See Note	Title	Lecturer	Producer	Approx Duration	Col/BW	Year Produced	Description
Amateur Radio — Historic Interest							
c	Wireless Telegraphy-circa 1910		?	10mins	B&W	1910	Archive material courtesy David Wardlaw VK3AUW
c	Amateur Radio-TV Pilot		WIA NSW	30mins	B&W	1968	Archive material courtesy TEN channel 10
-	Opening for Burley Griffen Bldg SA HQ		VK5KG	45mins	Col	1977	Archive material
	ATV in Australia 1978 made for British ATV Club		VK5KG	30mins	Col	1978	Archive material
-	ATV in United Kingdom 1978 reply from BATC		G8CJS	30mins	Col	1978	Archive material
-	ATV in Australia 1980/81 Made for British ATV Club		VK5KG	60mins	Col	1980	Clips from ATV Groups in VKs 2,3,4,5 & 7
-	History of ATV in South Australia		VK5KG	30mins	Col	1980	Archive material, still building
-	ATV in United Kingdom .978/81		G8CJS	30mins	Col	1981	Remake of their previous effort
o*	CQ ATV DX International 1983		WB2LLB	60mins	Col	1983	ATV in USA and Europe
-	High Definition TV Tutorial	Don Fink	WB2LLB	60mins	B&W	1983	A look at what is to come in Broadcast TV
-	ATV Hamfest, York Pennsylvania Sept'83	Various	WB2LLB	6hrs	Col	1983	Various ATV technical lectures from USA
-	Opening of Amateur Radio House — NSW HQ		VK2BDN	102mins	Col	1983	Archive material
	ATV in Victoria, .984		VK3AHJ	54mins	Col	1984	Courtesy of "The Roadshow Gang"
c	"Journey to the White Volcano" The Heard Island Dxpedition				Col	1983	
c	Heard Island Dxpedition		ch 2,7,9,10	20mins	Col	1984	Archive material; NO LOAN OR COPY AVAILABLE
	Keynote speeches by Fed Pres David Wardlaw & State DOC Manager John Milton		WIA NSW	135mins	Col	1985	From WIA 75th Anniversary
	Heard Island Dxpedition	VK2BCC	WIA NSW	60mins	Col	1986	[redacted] Seminar
Amateur Radio — Promotional							
o	The Ham's Wide World		ARRL	27mins	Col	1969	Superseded by "The World of Amateur Radio"
	This is Amateur Radio		ARRL	15mins	Col	1970	Pitched at teenagers
-	Moving Up to Amateur Radio		ARRL	11mins	Col	1975	Pitched at CBers
c	7J1RL DXpedition		JARL	60mins	Col	1976	General Amateur Radio interest; LOAN ONLY
	This Week has 7 Days looks into Amateur Radio		HSV7	25mins	Col	1978	Pitched at teens; includes some ARRL footage.
o	The World of Amateur Radio		ARRL	26mins	Col	1978	Superseded by "The New World of Amateur Radio"
	Amateur Radio — The National Resource of Every Nation		VK5KG	6mins	Col	1979	Encapsulates AR; good for public exhibitions
	Amateur Radio — The National Resource of Every Nation		VK5KG	60mins	Col	1979	Continuously running version available ON LOAN
	The New World of Amateur Radio		ARRL	28mins	Col	1988	Supersedes "The World of Amateur Radio"
Antennas							
c	G6CJ's Aerial Circus	G6CJ	WIA	90mins	B&W	1977	THE Definitive Antenna Lecture; LOAN ONLY
	Wire Antennas	VK5RG	VK5KG	40mins	B&W	1978	Antennas for HF and Antenna Tuners
	Loaded Wire Antennas	VK5NN	VK5KG	50mins	Col	1980	Using Inductive and Capacity loaded Antennas
	[redacted]						
w	Antennas and Directivity	VK2BBF	OTC	73mins	Col	1985	Lecture given to a group of Radio Amateurs
	Antenna Rotator Systems	VK5AIM	VK5KG	50mins	Col	1986	Servicing the several different types
-	[redacted]	VK5RG	VK5KG	62mins	Col	1986	Includes terminated antennas
ATV — Activity							
-	ATV News from UK (via Doug VK6ER)				Col	1984	Unedited clips
-	[redacted] British ATV Club		WB0-QCD	100mins	Col	1988	Clips from ATV Groups in the USA
-	VK5 ATV Call-in		VK5ZBD		Col	1990	Made for VK4XRL who had recently visited
ATV — [redacted]							
-	[redacted]	Chris Long	VK5KG	25mins	Col	1982	Re-creation of TV as transmitted by [redacted].
-	[redacted] ATV	VK5GO	VK5KG	6mins	Col	1983	ATV camera & TX mounted in a model aeroplane.
-	VK5RCN — Aust's first wind powered ATV repeater.	VK5KAU	VK5KG	61mins	Col	1986	Tour of VK5RCN by Barrey Bryant (silent key).
-	Australian TV History The Untold Story	Chris Long	VK5KG	56mins	Col	1988	Lecture to Radio Amateurs Old Timers Club.
	Australian TV History — Part 2	Chris Long	VK5KG	49mins	Col	1988	Technical slides not used in the above.
-	The Development of the TV Test Card	George Hersee	G8PTH	43mins	Col	1988	Made for BATC by the BBC Training Dept.
-	[redacted]		BATC	19mins	Col	1990	Excellent introduction to ATV
-	The first nation-wide ATV AUSSAT TX	Gladesville ARC		2hours	Col	1990	Noisy off-satellite but interesting.
ATV — Technical							
o	The Signal to Noise Story	VK3ATY	VK3AHJ	45mins	Col	1982	Superseded by "UHF Pre-amplifiers" (below).
-	UHF Preamplifiers	VK3ATY	VK3AHJ	45mins	Col	1983	Explanation and demo. of low noise preamps.
-	Getting Started in Amateur Television	VK5KTV	VK5KG	55mins	Col	1983	How to set up an ATV station
-	Testing ATV Transmitters	VK5KG	VK5KG	50mins	Col	1983	How to correctly measure ATV systems.
Computers							
-	Demo. of VK5RTV's Micro-Computer Controller #1	VK5KG	VK5KG	10mins	Col	1979	First u-Computer controlled repeater in VK.
o	Understanding Micro-Processors	VK5PE	VK5KG	60mins	Col	1980	A somewhat dated technical description.
o	An ATV Hamshack Micro-Computer	VK3AHJ	VK3AHJ	10mins	Col	1981	Describes now unavailable microcomputer kit.
-	Getting Started in Amateur Micro-Computers	VK5JF	VK5KG	33mins	Col	1983	Demo of hard & software for Amateur Radio.
Data Transmission							
-	Getting Started in Amateur RTTY	VK5JM	VK5KG	85mins	Col	1983	RTTY using teleprinters and Micro-Computers.
	Amateur Packet Radio	VK5AGR	VK5KG	60mins	Col	.984	Theory and Demonstration.
-	Packet Radio Lecture by Jim Swetlikne				Col	.984	From WIA Seminar
	Packet Radio — 10 months on	VK2KYJ VK2AAB	WIA NSW	65mins	Col	1985	Raw Unedited; from 75 anniv. VK2 Seminar.

See Note	Title	Lecturer	Producer	Approx Duration	Col/BW	Year Produced	Description
Amateur Radio — Historic Interest							
w	X25 Protocols and Packet Switching	VK2ZXB	OTC	47mins	Col	1986	Lecture given to a group of Radio [illegible]
New	Amateur Satellites and Packet Radio	VK5AGR	Gladesville ARC	130 mins	Col	1989	
Microwave Techniques							
	Introducing Microwaves	VK5ZO	PI Video	74mins	Col	1988	Des Clift gives a "Nuts & Bolts" expert technical lecture
Propagation							
-	Getting Started in Understanding the Ionosphere	VK5NX	VK5ZBD	50mins	Col	1983	How the Ionosphere aids HF [illegible]
-	Moonbounce EME lecture by Lyle Patison	VK2ALU			Col	1984	From WIA Seminar
-	VHF Signal Enhancement by Aircraft	VK2ZAB	WIA NSW	70mins	Col	1986	Raw Unedited; from 1986 VK2 Seminar
New	HF DX Seminar with Iris & Lloyd Colvin		Gladesville ARC	74 mins	Col	1990	
Satellites							
o	Getting Started in Amateur Satellites	VK5HI & VK5AGR	VK5KG	60mins	Col	1983	Superseded (see below)
o	An Introduction to Amateur Satellites (Pt 1)	VK5AGR	VK5KG	60mins	Col	1984	An overview of [illegible] working
o	Micro-Computer Aids to Satellite Tracking (Pt 2)	VK5AGR	VK5KG	30mins	Col	1984	Programs for tracking & decoding telemetery
-	Using Phase III Amateur Satellites	VK5HI	VK5KG	90mins	Col	1984	History, construction & use of high orbit satellites.
-	The Amsat Oscar Phase 3 Story	DJ4ZC	VK5KG	80mins	Col	1985	Dr. Karl Meinzer "The Father of Os[illegible] of launch.
	Antennas for Satellites		WIA NSW	75mins	Col	1986	Raw Unedited; from Dr Trevor [illegible] Seminar
New	Amateur Satellite Service What it has to offer	VK5AGR	Gladesville ARC	190 mins	Col	1989	
New	Amsat Ground Control What is involved	VK5AGR	Gladesville ARC	130mins	Col	1989	
Space — General Interest							
-	Apollo 13 Disaster	VK5JM	VK5KG	90mins	Col	1980	Australian tracking procedure saved Apollo 13
o	SSTV Pictures from Space — Voyager		VK5KG	15mins	Col	1983	SSTV pics converted from Saturn fly [illegible]

See Note	Title	Lecturer	Producer	Approx Duration	Col/BW	Year Produced	Description
Amateur Radio — Historic Interest							
-	Aussat Australia's Domestic Communications Satellite	VK5JM	VK5KG	62mins	Col	1984	Technical description of services offered
-	Amateur Radio's Newest Frontier		ARRL	26mins	Col	1985	Amateur Radio in Space; General PR.
	Working WSLFL in orbit from VK3ARR	Richard Elliot		23mins	Col	1986	Raw Unedited actuality footage
Miscellaneous							
-	An Auxiliary Battery Charger		VK5KG	30mins	Col	1981	Charging a second mobile battery
-	Lecture — Winning Foxhunts	VK5TV	VK5KG	45mins	Col	1981	How to do it from one who has!
-	Getting Started in Amateur Construction	VK5AIM	VK5KG	50mins	Col	1983	Mechanical hints for novice constructors
-	The Communications. Consequences of Nuclear War	Dr John Coulter	VK5ZBD	60mins	Col	1983	Why your gear may not survive even if you do!
-	The Far Eastern Broadcasting Company		VK5KG	60mins	Col	1984	How a Short Wave Broadcaster operates
	The Australian "Over the [illegible]	Dr Phil Whitham	VK5KG	60mins	Col	1984	How the "Australian Woodpecker" works
-	What to Expect when the RI Calls!		VK5KG	34mins	Col	1984	by Geof Carter — a Dept of Communications Field Officer
-	A Future Shock — Lecture by Roger Harrison				Col	1984	From WIA Seminar
-	Radio Comm. Act — Lecture by Colin Oliver				Col	1984	From WIA Seminar
-	Doppler Direction Finding for Foxhunters	VK2BYY	WIA NSW	43mins	Col	1985	Raw Unedited; from 75 anniv VK2 Seminar
w	Fitting BNC Connectors		OTC	7mins	Col	1985	Correct Assembly of Crimp type BNC plugs
w	Handling Static Sensitive PCBs	Paul Tardent	OTC	6mins	Col	1986	Improving reliability of Printed Cots.
-	Extra License Grades	VK2ZTB	WIA NSW	70mins	Col	1986	Raw Unedited; from 1986 VK2 Seminar
-	Thick Film Modules	VK5DI	VK5KG	45mins	Col	1988	Description of modules available from VK5 WIA
	Quartz Crystals	VK5GL	VK5GL	106mins	Col	1988	Clem Tilbrook gives a "Nuts & Bolts" expert technical lecture
New	How to survive in a Dog Pile	VK2DEJ	Gladesville ARC	148 mins	Col	1989	
New	Making friends on DX	VK2SG	Gladesville ARC	28 mins	Col	1990	

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WIA DXCC AWARD

Awards General Rules

Cost Free to all WIA members, VK non-members pay $A5.00 and others $US5.00 or 8 IRCs.

Verifications Applicants need to hold QSL cards for QSOs claimed. However, do not send QSL cards with your application. A list of all contacts is needed which should list the following information:-

Date, time, callsign of station contacted, frequency, mode.

Contacts should be listed in order of callsigns. At the bottom of this list should be a declaration signed by an official of a recognised Society or by two licensed amateurs. Signatories to the declaration should clearly indicate their names and callsigns.

Applications

— Applicants should state whether they are WIA members and, if so, list their membership number. Where relevant, changes in callsigns and dates of such changes should be indicated.
— All contacts for any particular award should be made from the same call area.
— Crossband contacts are not eligible, nor are those made through terrestrial repeaters, from aircraft, or to or from sea-going vessels.
— Where a fee is payable this should be sent with the application.
— In cases of dispute the decision of the Federal Awards Manager and two officers of the Federal Executive on the interpretation of these rules shall be final and binding

Applications should be sent to Federal Awards Manager, Wireless Institute of Australia, PO Box 300, South Caulfield, Victoria 3162, Australia.

WIA DXCC Award

This award is available to all amateurs who submit evidence of having worked 100 countries,

and can be endorsed for various bands and modes. Acceptable countries are those that are acceptable for ARRL DXCC, with the WIA reserving the right to make different decisions in regard to additions and deletions.

Having obtained the DXCC award, holders may register subsequent claims for higher totals and these will be published from time to time in Amateur Radio magazine in the form of a ladder. No stickers to indicate these higher levels on certificates are available. Applications for higher totals should be made in multiples of 25 up to a total of 200 (i.e. 125, 150, 175, 200) and thereafter in multiples of 10 up to a total of 300. After a total of 300 is reached applications will be processed in one country steps or as required.

Should a country be deleted from the DXCC list, credit for that country will be allowed if worked before the date of deletion. The DXCC ladder will show the members tally of current countries and a total of current plus deleted countries e.g. 200/220 — meaning 200 current countries and an extra 20 that have been deleted at some time, but were worked before the date of deletion.

All claimed QSO's must be made from the same DXCC country.

General rules apply.

WIA DXCC Listings

The listings below are current as at 1st January 1993. If your particular listing is not shown, it is because you have not contributed to upgrades after 1st December 1987. It means that your listing has been removed from the active list and placed in the inactive list. In order to become active again, just supply an upgrade.

The above procedure of moving to inactive files will occur again on 1st December 1993. You may appreciate that this action has to be taken to avoid the active files from becoming too cumbersome.

WIA DXCC STANDINGS — PHONE

Honour Roll

CALLSIGN	COUNTRIES
VK5MS	323/373
VK4KS	323/365
VK4LC	323/365
VK5WO	323/354
VK6LK	323/343
VK6HD	323/336
VK3QI	323/332
VK3AKK	323/331
VK6RU	322/373
VK5XN	322/338
VK4RF	322/337
VK3DYL	322/323
VK2FGI	319/320
VK3OT	318/327
VK4OH	318/320
VK5EE	317/318
VK6NE	316/328
VK3CSR	316/320
VK1ZL	316/317
VK3AMK	314/329

General Listing

VK6AJW	312/315
VK3YJ	312/314
VK4VC	308/324
VK5WV	305/322
VK3RF	305/311
VK3AWY	305/310
VK3WJ	305/308
VK7BC	303/309
VK2WU	294/296
VK4UA	293/308
VK4PX	292/312
VK6PY	292/294
VK2AKP	291/294
VK4UC	290/306
VK2DTH	288/289
VK2APK	287/313
VK6RO	287/289
VK4BG	286/299
VK7AE	285/291
VK3CYL	284/290
VK3DU	284/290
VK5OU	283/286
VK3VU	272/275
VK4DP	271/280
VK3JI	266/279
VK6VS	258/259
VK2SG	254/274
VK3VQ	254/269
VK3GI	254/256
VK2AVZ	253/257
VK4QO	253/255
VK2ETM	240/
P57AB	236/237
VK2PU	232/233
VK2BCH	224/226
VK2CKW	224/225
VK4OX	220/222
VK5BO	220/222
VK3DP	220/221
VK5IE	220/221
VK6YF	212/213
VK1PS	211/212
VK2VBL	208/209
VK2VFT	203/205
ON6DP	202/
VK4KRP	200/201
VK6BQN	187/190
KA1TFU	177/178
VK3DD	175/176
VK2BQS	162/163
VK3DVT	160/161
7J1AAL	150/
VK3DNC	142/
VK6LC	139/
VK4VJ	136/137
SM6PRX	125/126
VK7YP	123/124
VK7WD	116/
VK3BRZ	115/116
VK4NJQ	111/115
VK4ARB	111/
VK4LV	108/110
VK5GZ	108/109
VK5AGM	106/107
VK4EJ	105/106
N4JED	105/
VK3EHP	104/105
VK4VIS	104/105
VK4BJE	103/104
VK3YH	103/
VK4DMP	102/
VK5ZH	101/104
VK2CMV	101/102
VK4KGE	100/101
VK3TI	099/101
VK3PTB	099/100

WIA DXCC STANDINGS — CW

Honour Roll

CALLSIGN	COUNTRIES
VK3QI	319/326
VK6HD	314/331

General Listing

VK2QL	313/359
VK3XB	313/343
VK3YL	304/340
VK4RF	304/328
VK3KS	299/322
VK6RU	275/317
VK2APK	275/304
VK5WO	267/268
VK3AKK	263/265
VK3JI	242/265
VK7BC	212/219
VK3DP	211/212
VK4DA	208/209
VK2CWS	204/205
VK4LV	184/190
VK6PY	179/181
VK4DP	178/188
VK4UC	170/178
VK5BO	160/184
VK5GZ	151/152
VK3DNC	147/148
VK4UA	143/177
EA6AAK	138/
VK7DQ	138/
VK2SG	137/148
VK6ASO	132/133
VK4KS	127/139
VK2TB	124/125
VK3AGW	120/
VK2AKP	116/117
VK5QJ	108/109
VK4FB	105/106
VK4PX	104/112
DK9EA	100/

WIA DXCC STANDINGS—OPEN

Honour Roll

CALLSIGN	COUNTRIES
VK4KS	323/365
VK5WO	323/354
VK6HD	323/336
VK3QI	323/333
VK3AKK	323/331
VK6RU	322/373
VK4RF	322/354
VK3YL	321/363
VK3OT	321/330
VK3JA	314/359
VK3AMK	314/329

General Listing

VK7BC	313/318
WA3HUP	308/330
VK3XB	303/340
VK4PX	299/323
VK4UA	296/310
VK2APK	294/328
VK4BG	293/309
VK6PY	293/297
VK4UC	292/310
VK2AKP	291/294
VK2SG	290/314
VK6RO	288/290
VK3JI	287/311
VK3CYL	284/290
VK4DP	279/287
VK3DP	278/279
VK3VQ	269/284
VK5BO	266/301
VK4DA	209/210
VK3DNC	181/182
PR7CPK	175/
VK2BQS	172/173
VK5GZ	164/165
VK6LC	142/143
VK6ASO	137/138
VK4NJQ	134/139
VK6NV	127/128
VK4EZ	123/131
VK2AMV	120/126
VE7RD	107/
VK3COR	103/104
VK7TS	102/
SM7WF	101/
VK7DS	100/102
VK2KE	100/
VK5ZN	100/

WIA DXCC STANDINGS—RTTY

CALLSIGN	COUNTRIES
VK3EBP	169/170
VK2SG	159/160
VK2BQS	109/110
VK5RY	101/102

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Help stamp out stolen equipment — keep a record of all your equipment serial numbers in a safe place.

STOLEN EQUIPMENT REGISTER

The Stolen Equipment Register is one of many services offered to members by the WIA. It has been in operation since 1980, and is maintained on a computer database in the Federal Office.

Members wanting to take advantage of the Register, either to publicise the theft of their equipment, or to check equipment they are about to purchase, may write, fax, or telephone the Federal Office.

Any telephone reports of stolen equipment MUST be followed by written confirmation of the details.

For maximum efficiency, these details should include Manufacturer's name, model, type of equipment, serial number, date stolen, owner's name, address and callsign, any distinguishing features or modifications and the police contact (if any).

When equipment is recovered it is important that you advise the Federal Office as soon as practicable.

The following list is the most up-to-date information available at the time of going to press, but is based entirely on information received from you, the member. Would all members please check this list and immediately advise if there are any amendments.

Only those items stolen in the past five years are included in this list.

MANUFACTURER	MODEL	DESCRIPTION	SERIAL NUMBER	OWNER	DATE STOLEN	COMMENT
AEA	PAKRATT	MULTIMODE TNC	19092	VK3XBE	28.07.91	
ALINCO	ALD24T	2M/70CM MOBILE RIG	10107310	VK2TPH	21.01.91	DIPLEXER FITTED 2 ANTENNA CABLES
AMSTRAD	PC700	LAPTOP COMPUTER	532-872380	VK5ALE	16.04.92	ENGRAVED LEPARC OR VK5ALE
BELCON	LS-202E	2M M/MODE H/HELD	401992	VK3YYD	07.11.90	
BWD	804	DC-10MHZ SCOPE	51767	VK2ZQW	11.01.90	-
CHIRNSIDE		5 MOB HF ANTENNAS	VK3AMM	26.03.92		
COMMODORE	1541 II	DISK DRIVE		VK5ALE	03.04.91	ENGRAVED L.E.P.A.R.C.
	64	COMPUTER	VK5ALE		03.04.91	ENGRAVED L.E.P.A.R.C.
DAIWA	2M 70 CM	CROSSNEEDLE SWR MTR		VK3XBE	28.07.91	
	CN-620A	SWR/POWER METER	-	VK2DQP	16.09.91	
	CNW-419	ANTENNA TUNER		VK3XBE	28.07.91	
DICK SMITH		2M 5/8 MOBILE WHIP		VK3AMM	26.03.92	
	T-2000	SOLDERING STATION	-	VK2DQP	16.09.91	
DRAKE	TR-7	HF TRANSCEIVER	2333	VK2AML	16.05.90	OWNERS NAMES ENGRAVED
DSE	COMMANDER	2M FM TRANSCEIVER		VK2ZOD 3YOS	12.06.92	REAR PANEL ENGRAVED MIC SOC CHGD
EMTRONICS		NOISE BRIDGE	EM342	VK4AAE	27.10.89	-
FDK	MULTI 7	2M TRANSCEIVER		VK5XY	06.03.92	ENGRAVED D/LICENCE S 415 265 O
GCOL	GV-16	2 M FM HANDHELD		VK3JDO	17.11.89	WITH ANTENNA
GME	TX472S	40 CH UHF T/CEIVER	912 48058	VK3KLF	14.06.90	-
	TX830	40 CH AM CB	8770556	VK4IS	15.08.90	-
GOODWILL	GFC8055F	DIGITAL FREQ COUNTER	2020452	VK2IT	07.08.91	
HOME BREW	-	ANTENNA TUNING UNIT	-	VK2DQP	16.09.91	
	-	ELECTRON MORSE KEYER	-	VK2DQP	16.09.91	
HOMEBREW		6M 60W LINEAR AMP		VK3AMM	26.03.92	
ICOM	2410H	MOBILE RADIO	2668	STEWART ELEC	25.04.92	
	2SAT	HAND HELD	1387	STEWART ELEC	25.04.92	
	2SRA	HAND HELD	3299	STEWART ELEC	25.04.92	
	701	HF TRANSCEIVER	02318	VK5ALE	16.04.92	ENGRAVED LEPARC OR VK5ALE
	735	MULTI-MODE HF RADIO	38065	STEWART ELEC	25.04.92	
	HM4G	SPEAKER MIC	-	VK5ZGB	16.12.89	-
	IC02A	2 M FM HANDHELD	29906249	VK5ZGB	16.12.89	-
	IC02A	2M FM HANDHELD	23186	VK2FZH	09.06.89	WITH BP3 AND BC25E
	IC02AT	2 M HAND HELD	406070630	VK2OG	08.10.91	
	IC044	70 CM FM HANDHELD	-	VK5ZGB	16.12.89	-
	IC1271A		001398	VK3XBE	28.07.91	
	IC211	2 M TRANSCEIVER	-	VK2IT	07.08.91	WITH MICROPHONE
	IC22	2M FM TRANSCEIVER	12467	VK1TR	06.02.90	NO POWER PLUG/DIAL LAMP UNUSUAL
	IC22	2M FM TRANSCEIVER	10918	VK3XD	08.02.90	-
	IC22S	2M FM TRANSCEIVER	15674	VK2CIB	11.02.89	-
	IC22S	2M FM TRANSCEIVER	11912	VK2ETJ	06.03.88	PRE-AMP, SOCKET
	IC255A	VHF TRANSCEIVER	10308425	VK3KLF	14.06.90	-
	IC271A	2M ALL MODE TRCVER	27402603	VK3XBE	28.07.91	
	IC280	TRANSCEIVER	02592	VK2BVW	30.03.88	-
	IC290A	ALL MODE TRANSCEIVER	001532	VK3YFA	01.11.90	-
	IC2A	2M FM HANDHELD	12213837	VK5ABY	22.12.88	-
	IC2GAT	2M FM HANDHELD	08616	VK3JDO	17.11.89	WITH BP70, BC36, BPSA X 2
	IC471A	70 CM TRANSCEIVER	20801900	VK3XBE	28.07.91	
	IC560	6M TRANSCEIVER	01153	VK3MT	01.02.90	ENGRAVED SECURITY NO. T-00510
	IC560	6 M TRANSCEIVER	02057	VK2IT	07.08.91	WITH MICROPHONE
	IC701	HF TRANSCEIVER	8001039	VK2???	15.02.88	
	IC701PS	POWER SUPPLY	7800978	VK2???	15.02.88	-
	IC721	HF TRANSCEIVER	003663	A. WOJNAR	02.07.90	TRANSCEIVES ALL RFDS FREQUENCIES
	IC730	HF TRANSCEIVER	13814689	VK3MT VK3COT	05.11.92	DC POWER CORD NOT TAKEN
	IC735	HF TRANSCEIVER	-06196	RMIT	06.12.92	ENGRAVED HEATSINK & TOP COVER
	IC735	HF TRANSCEIVER	020254	VK2AZI	16.12.92	INC MOUNTING BRACKET/MICROPHONE
	IC735 PSU	POWER SUPPLY	-0180	RMIT	06.12.92	
	IC745	HF TRANSCEIVER		VK3XBE	28.07.91	
	ICR70	COMMS RECEIVER	18503539	VK3XBE	28.07.91	
	ICR7000	COMMS RECEIVER	002670	VK3XBE	28.07.91	
	P2AT	HAND HELD	1817	STEWART ELEC	25.04.92	
	PS30	POWER SUPPLY	20302017	VK3XBE	28.07.91	
	R1	WIDE BAND RECEIVER	64395	STEWART ELEC	25.04.92	
	SM6	DESK MICROPHONE	20507750	VK3XBE	28.07.91	
	W2A	DUAL BAND HAND HELD	1866	STEWART ELEC	25.04.92	

MANUFACTURER	MODEL	DESCRIPTION	SERIAL NUMBER	OWNER	DATE	COMMENT
KDK	2025 MK II	2M TRANSCEIVER		VK2ETJ	06.03.88	DEFUNCT FINAL
	FM2025 MK 2	2M FM TRANSCEIVER	A5020	VK2AML	03.07.88	SHARPE MICROPHONE
	MULTI 7	2M HANDHELD		VK2TJB	09.02.88	DRIVERS LICENCE NO. ENGRAVED
KENWOOD	309 VFO	VFO TO SUIT TR7200G	440168	VK5ALE	03.04.91	
	DM81	GRID DIP OSCILLATOR	4020163	VK2KLF	10.08.89	STENCILLED IN 20MM BRIGHT YELLOW
	LF-30A	LOW PASS FILTER	-	VK2ADP	16.09.91	
	MC 50	MICROPHONE	-	VK2DQP	16.09.91	
	MC-50	DESK MICROPHONE	N/A	VK5ABY	22.12.88	-
	MSI	MOBILE MOUNT		VK5BJA	30.05.89	-
	PS430	POWER SUPPLY		VK3CLV	16.12.91	
	SMC/3C	H/HELD MIC & SPEAKER	-	VK2PRK	25.07 91	
	TH75A	VHF/UHF HAND HELD	0061315	VK6KCH	26.02.92	CASE - SPKR/MIC - MOB POWER LEAD
	TM201B	VHF TRANSCEIVER	7011611E	VK3CLV	16.12.91	
	TM221A	2M FM TRANSCEIVER	8110722	VK2CCD	09.04.88	
	TM221A	2M FM TRANSCEIVER	8022583	VK3KGM	04.11.92	
	TM231A	2M FM TRANSCEIVER	0051016	VK4IS	27.07 90	-
	TM441A	432 MHZ FM TRANSC	6010370	VK4IS	27.07 90	-
	TR2600A	2M HANDHELD TCVER	5060934	VK2KLF	10.08.89	MISSING HAND STRAP
	TR2600A	2M HANDHELD	5060895	VK5BJA	30.05.89	INCLUDING RUBBER DUCK ANTENNA
	TR7200G	2M TRANSCEIVER	111048	VK5ALE	03.04.91	
	TR751A	144 MHZ TRANSCEIVER	7050702	VK3HY	23.04.92	NO IDENTIFICATION
	TR751A	2M ALL MODE T/CEIVER	7050512	VK3KMJ	25.02.90	GREY MIC - DCL MODEM BOARD
	TR7850	2M FM H/HELD T/CEIVR M	2020561	VK2ALK	22.10.88	-
	TS120S	HF TRANSCEIVER	0080035	VK2EV	05.06.92	WITH MIKE AND 12V POWER LEAD
	TS120S	HF TRANSCEIVER	0070741	VK5AKN	12.05.92	ENGRAVED WITH DRIVERS LICENCE NO
	TS130S	HF TRANSCEIVER	40404C8	VK2BVW	30.03.88	-
	TS130S	HF SSB TRANSCEIVER	1090168	VK5ABY	22.12.88	-
	TS440S	HF TRANSCEIVER	7090271	VK2FIT	24.10.89	WITH PS50 PSU & MC85 DESK MIC
	TS440S		7031310	VK6ID	25.08.91	
	TS440S	HF TRANSCEIVER	R 7060309	VK3CLV	16.12.91	SP40 SP50 EXTERNAL SPEAKERS
	TS440S	HF TRANSCEIVER	9100338	VK6ELL	01.02.92	
	TS440S	HF TRANSCEIVER	0060078	VK2FIT	01.07 90	-
	TS440S	HF TRANSCEIVER	0101192	VK3NRG	14.10.90	STOLEN FROM VEHICLE IN PERTH
	TS520	HF TRANSCEIVER	010296	VK2ZQW	11.01.90	-
	TS520S	HF TRANSCEIVER	?	VK2FZH	09.06.89	STICKER FROM 'TURKEY RADIO'
	TS520SE	HF TRANSCEIVER	8650	VK5ALE	03.04.91	
	TS670	6M & HF TRANSCEIVER	?	VK2ZXC	28.06.90	-
	TV506	6M CONVERTER	720089	VK2ZQW	11.01.90	-
KING AIR	AIRCRAFT BAN	TRANSCEIVER		VK6ID	25.08.91	
KYOKUTO	FMI44	VHF FM TRANSCEIVER	8296	VK2ZQW	11.01.90	-
M/WAVE MODULE	MML-432-50	70 CM 50W AMPLIFIER		VK3XBE	28.07 91	
MICROMETER		SWR METER	NOT KNOWN	VK5ALE	16.04.92	ENGRAVED LEPARC OR VK5ALE
MICROWAVE	40W 144 MHZ	2M LINEAR AMPLIFIER	-	VK2ZQW	11.01.90	-
MIRAGE		2M 150W AMPLIFIER		VK3XBE	28.07.91	
		2M 60W AMPLIFIER		VK3XBE	28.07 91	
PAC-COMM	TINY 2	TNC	T5782	GOULBURN ARC	27.11.92	
	TINY 2	TNC	T6784	GOULBURN ARC	27.11.92	
PACCOM	DR200	DUAL PORT TNC	2231	[illegible]	27.05.91	RELAY IN BOX IN DC SUPPLY LINE
PACCOMM	TINY 2	TNC	T5359	VK5ALE	03.04.91	WITH MANUAL
PHILIPS	1680	VHF MOBILE T/CEIVER		VK5XY	06.03.92	ENGRAVED D/LICENCE S 415 265 O
	323	UHF CB HANDHELD		VK6ID	25.08.91	OFF 1 AND 20
	FM32.	70CM FM TRANSCEIVER	156	VK2IT	07.08.91	WITH MICROPHONE
	PRM80	VHF TRANSCEIVER	NOT KNOWN	VH3HY	23.04.92	4 COMM 3 X 144 MHZ RPTR CHANNELS
	SXA	UHF CB HANDHELD	[illegible]	[illegible]	25.08.91	2 OFF CH 17 AND 20
PHILLIPS	828	2M FM TRANSCEIVER	44982	VK4IS	15.08.90	10 CHANNELS - 3 FITTED
	FM828	VHF TRANSCEIVER		VK5ALE	03.04.91	1 CHANNEL 147.575
	FM828	FM TRANSCEIVER	45459	GOULBURN ARC	27.11 92	
REALISTIC		SCANNING RECEIVER		VK6ID	25.08.91	BNC SOCKET
SAWTRON	999	UHF CB TRANSCEIVER	203026	[illegible]	24.04.92	
SONY	2001D	COMMUNICATIONS RECVR	?	VK2FZH	09.06.89	BROKEN ANTENNA
STANDARD	C146A	2M TRANSCEIVER		[illegible]	05.10.92	XTALS FITTED RPT 6700-7000-6500
	C520	2M & 70 CM HANDHELD	F140829	ANDREWS COMM	18.02.90	STOLEN AT GOSFORD FIELD DAY
	C528	2M HAND HELD	OOE 130667	VK2PD	27.08.92	MANUAL TAKEN BUT NOT RUBBER DUCK
	C528	2M HAND HELD	OOE150667	VK2PD	27.08.92	MANUAL ALSO
	CAT08	MIC/SPEAKER		VK3XCE	05.10.92	
	CMP08	RUBBER DUCK ANTENNA		VK3XCE	05.10.92	
STC	MT36	SWR BRIDGE		[illegible]	27.05.91	
	MTR25 191B	VHF TRANSCEIVER		VK2RDX	27.05.91	CTCSS AND TIMER UNITS FITTED
	MTR25 191D	UHF TRANSCEIVER		VK2RDX	27.05.91	CTCSS AND TIMER UNITS FITTED
SWAN	MB40	40 M MOBILE T/CEIVER	[illegible]	VK2IT	07.08.91	
TELEQUIP'T	551	OSCILLOSCOPE		VK4AAE	27.10.89	
TONO	THETA 550	KEYBOARD TERMINAL	821485	VK3XBE	28.07 91	
UNIDEN	PC122	SSB/AM CB TRANSCEIVR	NOT KNOWN	[illegible]	23.04.92	PHILIPS MICROPHONE
VIBROPLEX	-	MORSE KEY		VK2DQP	16.09.91	
WELZ		SWR/POWER METER		[illegible]	16.12.92	
YAESU	FC 700	A T U	[illegible]	VK5ALE	16.04.92	ENGRAVED LEPARC OR VK5ALE
	FC707	ANTENNA TUNER	1L170086	VK2CFC	06.09.91	
	FC707	ANTENNA TUNER	[illegible]	[illegible]	27.10.89	
	FL2010	2M LINEAR AMPLIFIER	[illegible]	VK3DKO	25.08.88	MOUNTED IN CRADLE
	FP700	POWER SUPPLY	[illegible]	[illegible]	11.03.92	
	FP707	POWER SUPPLY	1L150596	VK2CFC	06.09.91	
	FP707	12V 20 AMP P/SUPPLY	[illegible]	VK5ABY	22.12.88	

MANUFACTURER	MODEL	DESCRIPTION	SERIAL NUMBER	OWNER	DATE STOLEN	COMMENT
	FP707	POWER SUPPLY	4C050487	VK4AAE	27.10.89	-
	FRG7	HF RECEIVER	8HH210862	VK2IT	07.08.91	
	FRG7700	RECEIVER	3M260983	VK2XPU	01.08.89	-
	FRG9600	SCANNING RECEIVER	5 N 120767	DICK SMITH	01.11.91	STOLEN FROM BENDIGO VIC STORE
	FT-280R	2M TRANSCEIVER	2F22898	VK3XCF	05.10.92	
	FT101B	HF TRANSCEIVER	320376	VK2IT	07.08.91	WITH DESK MICROPHONE
	FT101E	HF TRANSCEIVER	8J361432	VK2DQP	16.09.91	
	FT101E	HF TRANSCEIVER	7K/301042	VK5EZ	08.07.89	-
	FT102	HF TRANSCEIVER	3K090835	VK2FLM	23.12.90	ENGRAVED NO B62075 YM-36 MIC
	FT207R	2M HANDHELD	ID132704	VK2ETJ	06.03.88	-
	FT208R	2M FM HANDHELD	4E382078	VK2PJ	29.03.89	FAULTY VCO
	FT208R	2M HANDHELD TRCVR		VK3XBE	28.07.91	
	FT209RH	2M FM HANDHELD	6E-260229	VK4BWG	11.03.92	FNB4 & FBA10 BATTERY PACKS
	FT211RH	2 M MOBILE TX	8M180306	VK2UP	09.07.92	FROM MOTEL HURSTVILLE
	FT212RH	2 M TRANSCEIVER	IC630020	VK2XMM	01.07.91	
	FT23R	2M FM HANDHELD	OD071763	DSE BOX HILL	18.09.91	
	FT2700RH	VHF/UHF TRANSCEIVER	5L121354	VK2AGB	28.05.92	
	FT290R	2M FM TRANSCEIVER	5G450016	VK7HW	18.04.88	MOBILE BRACKET
	FT290R	2M FM TRANSCEIVER	2D100942	VK3DKO	25.08.88	CALLSIGN ENGRAVED
	FT290R	2M FM TRANSCEIVER	SF 280702	VK4AAE	27.10.89	COMPLETE WITH NICADS
	FT290RII	2M FM TRANSCEIVER	8G130128	VK3YNB	04.06.92	WITH BATTERY BOX
	FT470	DUAL BAND HAND HELD	9L150788	DICK SMITH	31.08.90	STOLEN FROM BOURKE ST MELB STORE
	FT4700RH	VHF/UHF TRANSCEIVER	9C212240	VK3EMJ	16.07.91	NO MICROPHONE OR POWER LEAD
	FT7	HF TRANSCEIVER	8K110846	VK2IV	04.11.88	DIAL ILLUMINATION MODIFICATION
	FT7	HF TRANSCEIVER		VK5XY	06.03.92	ENGRAVED D/LICENCE S 415 265 Q
	FT7	HF TRANSCEIVER	-	VK2PRK	25.07.91	ID 'NSW 718610' ENGRAVED ON BACK
	FT707	HF TRANSCEIVER	0C030440	VK3AMM	26.03.92	
	FT707	HF TRANSCEIVER	-	VK4AAE	27.10.89	-
	FT708R	70CMS FM HANDHELD	2J181463	VK2PJ	29.03.89	-
	FT712	UHF TRANSCEIVER	8I120576	GOULBURN ARC	27.11.92	
	FT757	HF TRANSCEIVER	4E-071058	VK4BWG	11.03.92	
	FT757GX	HF TRANSCEIVER	4J121785	VK2CFC	06.09.91	RF AMP NOISY - REQUIRES SERVICE
	FT757GX II	HF TRANSCEIVER	1L590102	DICK SMITH E	13.05.92	STOLEN FROM PARRAMATTA STORE
	FTV707	6M TRANSVERTER	1H010331	VK3AMM	26.03.92	
	FV707DM	EXTERNAL DIGITAL VFO	0L060097	VK4AAE	27.10.89	-
	SP4	EXTENSION		VK2AZI	16.12.92	
	YC355D	200MHZ FREQ COUNTER		VK2ZQW	11.01.90	-
	YM24A	MIC/SPEAKER		VK3XCE	05.10.92	
	YP150	DUMMY LOAD/PWR METER		VK3XBE	28.07.91	

WIA ACCREDITED EXAMINERS

(Listed in Postcode order)

Below is a list of examiners accredited by WIA Exam Service to conduct radio examinations using WIA Exam Service examination materials. The list is published in postcode order to assist candidates to determine the examiner closest to their location. This list was up-to-date as at 8 January 1993, but more applications to become an accredited examiner are still being received.

Accredited examiners will not only be able to provide advice and assistance in relation to examinations, but also about "how to become a radio amateur", to all interested enquirers in their locality. The DoTC and WIA Exam Service direct all such enquiries to accredited examiners in the area in which the enquirer lives.

Jim Jones VK5JF	Darwin Amateur Radio Club Inc	GPO Box 3583, Darwin,	0801. Tel 089 46 6119 (BH)
Barrie Burns VK8DI	Darwin Amateur Radio Club Inc	1 Kerin Pl, Rapid Creek,	0810. Tel 089 85 1068 (AH)
Spud Murphy VK8ZWM	Darwin Amateur Radio Club Inc	139 Lee Pt Rd, Wagaman,	0810. Tel 089 46 5887 (BH)
Trevor Connell VK8CO	Darwin Amateur Radio Club Inc	PO Box 40441, Casuarina,	0811. Tel 089 45 3373 (AH)
Jeff Farmer VK8GF	Alice Springs ARC	PO Box 2953, Alice Springs,	0871. Tel 089 52 2388 (BH)
Graham Heller VK8GR	Alice Springs ARC	PO Box 2953, Alice Springs,	0871 Tel 089 52 4536
Terry Murphy VK8TM	Alice Springs ARC	PO Box 2953, Alice Springs,	0871. Tel 089 55 0758
Richard Hand VK8AZ	Gove Amateur Radio Group	PO Box 211, Nhulunbuy,	0881 Tel 089 87 3148 (AH)
Grant Hinchcliffe VK2GIX	WARS Examinations	72 Vine St, Chippendale,	2008. Tel 02 319 1913 (AH)
Eric Van De Weyer VK2KUR	WARS Examinations	PO Box 131, Watsons Bay,	2030. Tel 02 318 6138 (BH)
Rick Cummins VK2QU	WARS Examinations	1493 Anzac Pde, Little Bay,	2036. Tel 02 661 3816 (AH)
George Voron VK2BGV	International ARC	2 Griffith Avenue, Roseville,	2069. Tel 02 417 1066
Sam Voron VK2BVS	International ARC	2 Griffith Avenue, Roseville,	2069. Tel 02 417 1066
David Bloodworth VK2KQV	Hornsby Amateur Radio Club	24 Wambool St, Turramurra,	2074. Tel 02 44 4080 (AH)
Graham Sommer VK2DWL	Hornsby Amateur Radio Club	PO Box 362, Hornsby,	2077. Tel 02 875 2273 (AH)
Tony Williams VK2DJW	Hornsby Amateur Radio Club	PO Box 362, Hornsby,	2077 Tel 02 489 3312 (AH)
Wally Jones VK2GTO		26 Donald St, Carlingford,	2118. Tel 02 871 5190 (AH)
Barry Gammage VK2GAM	WIA NSW Division	PO Box 1066, Parramatta,	2124. Tel 02 727 7338
Cec Purvis L20997	WIA NSW Division	PO Box 1066, Parramatta,	2124. Tel 02 649 9234
Terry Ryeland VK2UX	WIA NSW Division	PO Box 1066, Parramatta,	2124. Tel 02 689 2417 (BH)
Jim Goodger VK2JO		2 Fullam Rd, Blacktown,	2148. Tel 02 622 6268
James Rodgers VK2DXM	ROADS	119 Showground Rd, Castle Hill,	2154. Tel 02 680 1404 (BH)
Bob Girdo VK2RG		13 Iris St, Sefton,	2162. Tel 02 743 7555 (AH)
Miles Burkitt VK2GOJ	Miles Communications P/L	1 Conrad St, Wetherill Park,	2164. Tel 02 727 7338 (AH)
Hoss Bernhard VK2ICE	Fishers Ghost ARC	PO Box 34, Catherine Field,	2171. Tel 046 28 3839 (AH)
Wayne Brack VK2WDL	Bankstown Amateur Radio Club	54 Hillard St, Wiley Park,	2195. Tel 02 743 8417 (BH)
Stewart McCarthy VK2MX	St George ARS Inc	PO Box 530, Engadine,	2233. Tel 02 520 8662 (AH)
Barry McNeil VK2FP	Sydney Amateur Television Gp	3 Bella Vista St, Heathcote,	2233. Tel 02 520 2867 (BH)

Paul Smith VK2ZSA	St George ARS Inc	PO Box 530, Engadine,	2233 Tel 02 520 7323 (AH)
Tom Thornton VK2CJT	St George ARS Inc	PO Box 530, Engadine,	2233 Tel 02 520 5843
Ean Young VK2FSO	St George ARS Inc	PO Box 530, Engadine,	2233 Tel 02 580 5329 (AH)
Leon Brett VK2BLV	Central Coast ARC Inc	87 Albany St, East Gosford,	2250 Tel 043 24 1649
Bill Scovell VK2FKE	Central Coast ARC Inc	13 Tulani Ave, Daleys Point,	2257 Tel 043 43 2339
Greg Jackson VK2GWJ		26 Harding Ave, Lake Munmorah,	2259 Tel 043 58 8479 (AH)
Peter King VK2GPK	Southlakes Computers	6 Macnamir Close, Morisset,	2264 Tel 049 73 3688 (AH)
Jim Wing VK2MSB		10 Victory Street, Cooranbong,	2265 Tel 049 77 1507 (AH)
Peter Browne VK2GFE		PO Box 77, Warners Bay,	2282 Tel 049 58 2832 (AH)
Maurice Jones VK2CD		PO Box 77, Warners Bay,	2282 Tel 049 49 8786
Fred Lawler VK2SI	Westlakes Amateur Radio Club	PO Box 77, Warners Bay,	2282 Tel 049 64 8018 (BH)
Paul Lorentzen VK2ATR	Westlakes Amateur Radio Club	PO Box 77, Warners Bay,	2282 Tel 049 59 1788 (BH)
Greg Smith VK2GJS	Westlakes Amateur Radio Club	PO Box 77, Warners Bay,	2282 Tel 049 41 3468 (BH)
Dave Myers VK2DFL	Wicen (NSW) Inc	61 Fern St, Arcadia Vale,	2283 Tel 049 75 1136
Frederick Eade VK2AEE	Frederick William Eade	276 Park Ave, Kotara,	2289 Tel 049 57 5131
George Hombsch VK2FCC	Tamworth Radio Club Inc	PO Box 4, Tamworth,	2340 Tel 067 65 9351 (BH)
Neville Pratt VK2FNP	Tamworth Radio Club Inc	PO Box 4, Tamworth,	2340 Tel 067 65 4099
Allan Walker VK2ZJW	Tamworth Radio Club Inc	PO Box 4, Tamworth,	2340 Tel 067 64 1878
Val Birks VK2TB	Armidale & District ARC	Lot 79 Invergowrie Rd, MSF 2002 Armidale,	2350 Tel 067 75 2224
Roger Chubb VK2FGE	Armidale & District ARC	21 Tuncredi St, Armidale,	2350 Tel 067 72 7840 (AH)
Shane Rae VK2XRR		73 Cowper St, Wee Waa,	2388 Tel 067 95 3075 (AH)
Brent Paull VK2ZOO		18 Boundary St, Narrabri,	2390 Tel 067 92 3386 (AH)
Kevin Dockrill VK2GVE		12 Warrina Cres, Moree,	2400 Tel 067 52 4699 (AH)
Brian Steel		309 Chester St, Moree,	2400 Tel 067 52 1472
Niel Cunningham VK2RD	Oxley Amateur Radio Club	259 Hastings River Dve, Port Macquarie,	2444 Tel 065 83 6380
Keith Hanlon	Oxley Region ARC	PO Box 712, Port Macquarie,	2444 Tel
Larry Lindsay VK2CLL	Oxley Region ARC	PO Box 712, Port Macquarie,	2444 Tel 065 87 1155 (AH)
Geoff Stephenson VK2BTU	Oxley Region ARC	Lot 3 Burrawan Dve, Wauchope,	2446 Tel 065 85 3991
Bob Colsell VK2AWA	Coffs Harbour & District ARC	PO Box 655, Coffs Harbour,	2450 Tel 066 52 6135
Peter McAdam VK2EVB	Coffs Harbour & District ARC	PO Box 655, Coffs Harbour,	2450 Tel 066 52 7160
Hans Schumacher VK2DGV	Coffs Harbour & District ARC	PO Box 655, Coffs Harbour,	2450 Tel 066 51 2020 (AH)
John Williams VK2BUI	Coffs Harbour & District ARC	PO Box 655, Coffs Harbour,	2450 Tel 066 53 8313
Gerry Cresswell VK2IGC	Summerland Amateur Radio Club	PO Box 524, Lismore,	2480 Tel 066 63 1410 (AH)
Ken Hore VK2HE	Summerland Amateur Radio Club	PO Box 524, Lismore,	2480 Tel 066 21 8242 (BH)
Leith Martin VK2EA	Summerland Amateur Radio Club	PO Box 524, Lismore,	2480 Tel 066 24 2550 (AH)
Peter Richens VK2FSD	Summerland Amateur Radio Club	PO Box 91, Lismore Heights,	2480 Tel 066 24 3211 (BH)
John Toland VK2XKX	Summerland Amateur Radio Club	101 College St, Lismore,	2480 Tel 066 21 2933 (AH)
Rick Virtue VK2EJV	Summerland Amateur Radio Club	90-92 James St, Dunoon,	2480 Tel 066 89 5137 (BH)
James Glenn VK2AIQ		24 Tweed Broadwater Vill, Tweed Heads South,	2486 Tel 075 24 9772
Errol Chittick VK2EGC	Tweed Valley ARC	C/- 9 Grevillia Ave, Bogangar,	2488 Tel 066 72 3237 (AH)
Phil Evans VK2KEV	Tweed Valley ARC	C/- 9 Grevillia Ave, Bogangar,	2488 Tel 066 76 1671 (AH)
LLoyd Martin VK2BYU	Tweed Valley ARC	C/- 9 Grevillia Ave, Bogangar,	2488 Tel
Graham Denney VK2GID	Illawarra ARS Inc	2/2A Macquarie St, Wollongong,	2500 Tel 042 29 4170
Jim Hayes VK2EJH		1 Kathleen Cres, Woonona,	2517 Tel 042 84 9317 (AH)
Barry Sullivan VK2BZ		20 Narelle Cres, Woonona,	2517 Tel 042 85 2223 (AH)
Ken Goodhew VK2TKE		3 Hendricks Pde, Mt Warrigal,	2528 Tel 042 97 3037 (AH)
Darrel Nelson VK2USA	Illawarra ARS Inc	PO Box 341, Dapto,	2530 Tel 042 61 8636
Jennifer Cox		41 King George St, Caltala Beach,	2540 Tel 044 46 5728 (AH)
Peter Madden VK2XXS		30 Catherine St, Myola,	2540 Tel 044 46 5196
David Blunn VK2DDJ	Shoalhaven Amateur Radio Club	PO Box 230, Nowra,	2541 Tel 044 64 1056
John Bogdanski VK2FEX	Shoalhaven Amateur Radio Club	PO Box 230, Nowra,	2541 Tel 044 21 0670
James O'Brien VK2BHU	Far South Coast ARC	PO Box 46, Bega,	2550 Tel 064 94 1286
David Plumb VK2DRP	Far South Coast ARC	PO Box 686, Bega,	2550 Tel 064 92 2220
Ray Price VK2AWQ	Far South Coast ARC	26 Bay St, Tathra,	2550 Tel 064 94 1347
Robert Demkow VK2ENU		18 Ettalong Place, Woodbine,	2560 Tel 046 26 4776 (AH)
David Medcalf VK2GDM	Fishers Ghost ARC	9 Buffalo Way, Campbelltown,	2560 Tel 046 27 1025
Les Simmons VK2TJ	Fishers Ghost ARC	8 Raymond Ave, Campbelltown,	2560 Tel 046 28 3839
Michael Turner VK2WMT	Bankstown Amateur Radio Club	PO Box 375, Ingleburn,	2565 Tel 02 334 0023 (BH)
Ian Jeffrey VK2AIJ	Goulburn Amateur Radio Soc	144 Kinghorne St, Goulburn,	2580 Tel 048 21 6806 (AH)
Tony King VK2FBD	Goulburn Amateur Radio Soc	RMB 247 Mayfield Rd, Tarago,	2580 Tel 048 49 4433 (AH)
Alex Thuma VK2ATY	Goulburn Amateur Radio Soc	26 Willam St, Goulburn,	2580 Tel 048 21 9256 (AH)
Mike Morrissey VK1RI		32 Lonsdale St, Braddon,	2601 Tel 06 248 9600 (BH)
Neil Pickford VK1KNP	WIA ACT Division	GPO Box 600, Canberra,	2601 Tel 06 274 8422 (BH)
Mal Cooper VK1MC		PO Box 652, Jamison,	2604 Tel 06 241 1073 (AH)
Christopher Davis VK1DO	WIA ACT Division	123 Hawkesbury Cres, Farrer,	2607 Tel 018 62 5027
Rob Apathy VK1KRA	WIA ACT Division	5 Wrixon St, Latham,	2615 Tel 06 254 2982
Barry Busch'l VK2GDV	Twin Cities R & E Club Inc	355 Wilson St, Albury,	2640 Tel
Terry Clark VK2ALG	Twin Cities R & E Club Inc	PO Box 396, Albury,	2640 Tel 060 25 3292
Vic Hearne VK3CQP	Twin Cities R & E Club Inc	PO Box 396, Albury,	2640 Tel
Alan James VK2FIZ	Twin Cities R & E Club Inc	PO Box 396, Albury,	2640 Tel 060 25 1117 (AH)
Greg Sargeant VK2EXA	Twin Cities R & E Club Inc	PO Box 396, Albury,	2640 Tel 060 21 5438 (AH)
Graeme Scott VK2KE	Twin Cities R & E Club Inc	PO Box 396, Albury,	2640 Tel 060 21 3655 (BH)
David Ashley VK2JDA	Wagga Amateur Radio Club Inc	PO Box 294, Wagga Wagga,	2650 Tel
Harley Davison VK2AHD	Wagga Amateur Radio Club Inc	18 Warrawong St, Wagga,	2650 Tel 069 21 1004 (AH)
John Eyles VK2BXD	Wagga Amateur Radio Club Inc	PO Box 294, Wagga Wagga,	2650 Tel 069 22 2363 (BH)
Mike McDonnell VK2DAI	Wagga Amateur Radio Club Inc	PO Box 294, Wagga Wagga,	2650 Tel
Sid Ward VK2SW	Wagga Amateur Radio Club Inc	PO Box 294, Wagga Wagga,	2650 Tel 069 22 6082
Peter Watson VK2APW	Wagga Amateur Radio Club Inc	PO Box 294, Wagga Wagga,	2650 Tel
Leon Boneham VK2DLN	Griffith ARC Inc	PO Box 1804, Griffith,	2680 Tel 069 62 4534 (BH)
Graeme Watkins VK2DGW	Griffith ARC Inc	PO Box 1[illegible]6, Griffith,	2680 Tel 069 62 4577 (BH)
Pixie Chapple VK2KPC	St John Ambulance ARC	231 Shepherd St, St Marys,	2760 Tel 02 623 5663 (AH)
Brett Hazell VK2CBH	Chifley Amateur Radio Club	PO Box 280, Mt Druitt,	2770 Tel 02 671 2035 (AH)
Leon McHugh VK2FLI	Chifley Amateur Radio Club	PO Box 280, Mt Druitt,	2770 Tel 02 625 9646
Dave Pola VK2BDP	Chifley Amateur Radio Club	PO Box 280, Mt Druitt,	2770 Tel 02 628 9247 (AH)

Ralph Simmons VK2GRS	Chifley Amateur Radio Club	PO Box 280, Mt Druitt,	2770. Tel 02 671 4756
Alan Whitmore VK2YYJ		32 Greens Pde, Valley Heights,	2777 Tel 02 625 1388 (BH)
Adrian Clout VK2BFN		137 Lower Valley Rd, Hazelbrook,	2779. Tel 047 58 6797
Carl Palmer VK2BSD		176 Lower Valley Rd, Hazelbrook,	2779. Tel 047 58 6755 (AH)
Peter Van Gemert VK2ALL	Bathurst Amateur Radio Club	291 Durham St, Bathurst,	2795. Tel 063 31 2464
Neville Wilde VK2DR	Bathurst Amateur Radio Club	22 White St, Bathurst,	2795. Tel 063 31 5809 (AH)
Bruce Carroll VK2DEQ	Orange Amateur Radio Exams	PO Box 128, Orange,	2800. Tel 063 62 8703
Peter Carter VK2ETK	Orange Amateur Radio Exams	7 Ophir Rd, Orange,	2800. Tel 063 61 3439 (AH)
Vicki Marsden VK2EVM		Unit 11 'Woodlands', Hale St Orange,	2800 Tel 063 62 0087 (AH)
Ken Bird VK2GDK	Orana Amateur Radio Club	213 Alagalah St, Narromine,	2821 Tel 068 89 1308
Frank Wall VK2CWI	Orana Amateur Radio Club	'Westbrook', Narromine,	2821 Tel 068 89 0535
James Armytage VK2CJA	Orana Amateur Radio Club	'Kelburn', Gilgandra,	2827 Tel 068 48 1062
Bruce Chung VK2WWW	Orana Amateur Radio Club	26 Myrtle St, Gilgandra,	2827. Tel 068 47 2522
John Hams VK2JH	Orana Amateur Radio Club	Lot 28 Bencubbin Estate, Dubbo MS7,	2830. Tel 068 87 8241 (AH)
David Walters VK2AYO	Orana Amateur Radio Club	'Carramar' Burraway Rd, Dubbo MS4,	2830 Tel 068 88 5265
Brian Cooper VK2DHO	Parkes & District ARC Inc	C/- 4 William St, Parkes,	2870. Tel 068 62 2828
Tom Darcy VK2DDD	Parkes & District ARC Inc	4 William St, Parkes,	2870. Tel 068 62 1663 (AH)
Walter Field VK2NNF	Parkes & District ARC Inc	C/- 4 William St, Parkes,	2870. Tel 068 62 1776
Peter Hughes VK2MLG	Parkes & District ARC Inc	39 Orange St, Parkes,	2870. Tel 068 62 4217 (AH)
Dave Kent VK2BJI	Parkes & District ARC Inc	PO Box 564, Parkes,	2870. Tel 068 62 2154
Jan Burrell VK1BR	WIA ACT Division	20 Currey St, Gowrie,	2904. Tel
John Beverin VK3CMO	RMIT School of Electrotech	GPO Box 2476V, Melbourne,	3001 Tel 03 660 4455 (BH)
Graham Cottew VK3DPC	ARA Exam Service	GPO Box 628E, Melbourne,	3001. Tel 03 601 4203 (BH)
Neil Duncan VK3OK	ARA Exam Service	GPO Box 628E, Melbourne,	3001. Tel 03 601 4203 (BH)
Chris Edmondson VK3YID	ARA Exam Service	GPO Box 628E, Melbourne,	3001 Tel 03 601 4203 (BH)
Graham Judge VK3YGJ	ARA Exam Service	GPO Box 628E, Melbourne,	3001 Tel 03 601 4203 (BH)
Ralph Parkhurst VK3ZIP	ARA Exam Service	GPO Box 628E, Melbourne,	3001. Tel 03 601 4203 (BH)
Mike Ross VK3APW	ARA Exam Service	GPO Box 628E, Melbourne,	3001. Tel 03 601 4203 (BH)
Rob Whitmore VK3ESE	RMIT School of Electrotech	GPO Box 2476V, Melbourne,	3001. Tel 03 660 4479 (BH)
Peter Ormerod VK3CPO	RAAF Williams ARC	MCS No 1 Aircraft Depot, RAAF Williams Laverton,	3027. Tel 03 368 2266 (BH)
Bruce Kendall VK3WL	RAAF Williams ARC	8 Walwa Place, Werribee,	3030. Tel 03 741 7654 (AH)
Dixie Lee VK7HP	RAAF Williams ARC	5/24 Salisbury St, Werribee,	3030. Tel 03 742 3786
Brian Purcell VK3BQP		27 Kathleen St, Pascoe Vale South,	3044 Tel 03 386 7750
Howard Rider VK3ZJY		232 Cumberland Road, Pascoe Vale,	3044. Tel 03 306 8484
John Wright VK3AJL	J Wright & Associates	72 Ramsden St, Clifton Hill,	3068. Tel
Graham Gall VK3ZS		76 Greenwood Dve, Bundoora,	3083 Tel 03 467 2697
Chris McLaughlin VK3CHR		24 Collendina Cres, Greensborough,	3088. Tel 03 322 6104 (BH)
Ewen Templeton VK3BMV	NERG Exams	45 Cairns St, Greensborough,	3088. Tel 03 434 6071 (AH)
Greg Williams VK3VT	NERG Exams	1 Noorabil Crt, Greensborough,	308[illegible] Tel 03 634 5532 (BH)
Harry Lodder VK3AXJ	Camberwell Grammar Radio Club	PO Box 151, Balwyn,	3103. Tel 03 836 6266 (BH)
Les Cardilini VK3BLC	RMIT School of Electrotech	56 Anderson St, Templestowe,	3106. Tel 03 846 1561 (AH)
Des Bird VK3EDB	Electrotechnology RMIT	8 Queen St, Surrey Hills,	3127. Tel 03 836 1837 (AH)
Philip Adams VK3JNI	Scout R & E Service Unit	PO Box 311, Box Hill,	3128. Tel 03 438 3013 (AH)
Len Atyeo VK3DXM	Scout R & E Service Unit	PO Box 311, Box Hill,	3128. Tel 03 848 3580
Craig Cook VK3CMC	RMIT School of Electrotech	33 Haig St, Box Hill South,	3128. Tel 03 890 2117 (AH)
Peter Fraser VK3ZPF	Scout R & E Service Unit	PO Box 311, Box Hill,	3128. Tel 03 895 9617 (AH)
Geoff Hudson VK3VR	NERG Exams	16 Fowler St, Box Hill Sth,	3128. Tel 03 888 8121 (AH)
Rob Carmichael VK3DTR		PO Box 200, Forest Hill,	3131. Tel
Jim Linton VK3PC		PO Box 200, Forest Hill,	3131. Tel
Geoff Atkinson VK3YFA	EMDRC	PO Box 87, Mitcham,	3132. Tel 03 791 7988 (BH)
Jack Bramham VK3WWW	EMDRC	PO Box 87, Mitcham,	3132. Tel 03 873 2459 (AH)
Joe Magee VK3BKI	EMDRC	PO Box 87, Mitcham,	3132 Tel 03 729 8579 (AH)
Dave Neville VK3UC	EMDRC	PO Box 87, Mitcham,	3132 Tel 03 802 7492 (AH)
David Nisbet VK3XDA	EMDRC	PO Box 87, Mitcham,	3132. Tel 03 420 2035 (BH)
Len Vermeulen VK3COD	EMDRC	PO Box 87, Mitcham,	3132. Tel 03 808 5350 (AH)
Neale McLennan VK3BOS	Healesville ARG Inc	42 Panfield Ave, Ringwood,	3134. Tel 03 870 4491 (BH)
Craig McMillan VK3CRA	VK3CRA Amateur Exams	5 Sunview Crt, Dingley,	3172. Tel 03 551 5635
Frank Robinson VK3DDK		PO Box 173, Prahran,	3181. Tel
Andrew Bell VK3WAB	Moorabbin & District RC Inc	PO Box 58, Highett,	3190. Tel 03 544 2758
Brian Fairless VK3ES	Moorabbin & District RC Inc	PO Box 58, Highett,	3190. Tel 03 592 7536
Jerry Viscaal VK3MQ	Moorabbin & District RC Inc	PO Box 58, Highett,	3190. Tel 03 704 6355 (AH)
Mark Diggins VK3JMD		1 Pembroke Cres, Cheltenham,	3192. Tel 03 583 7692 (AH)
Brett Leslie VK3JHP		35 Evesham Rd, Cheltenham,	3192. Tel 03 584 4230 (AH)
Gordon Buchanan VK3BGB	FAMPARC	PO Box 38, Frankston,	3199. Tel 03 789 7710
Jessie Buchanan VK3VAN	FAMPARC	4 Milford Cres, Karingal,	3199 Tel 03 789 7710
Gordon Dawe VK3GAD	FAMPARC	C/- 4 Milford Cres, Frankston,	3199. Tel 03 783 7717
Audrey Gibson VK3FI		94 Kars St, Frankston,	3199 Tel 03 783 8714
Len Gibson VK3SI		94 Kars St, Frankston,	3199 Tel 03 783 8714
Graham Wallington VK3BGL	FAMPARC	13 Milford Cres, Frankston,	3199. Tel 03 789 2972 (AH)
Ian Stowe VK3GA	FAMPARC	20 Norfolk Cres, Frankston North,	3200 Tel 03 785 2976 (AH)
Chas Gnaccarini VK3BRZ	Geelong Amateur Radio Club	66 Smeaton Close, Lara,	3212. Tel 052 82 3167 (AH)
John Collins VK3TKH	Geelong Amateur Radio Club	22 Elinbank Dve, Grovedale,	3216. Tel 052 43 0075
Keith Vriens VK3AFI	Geelong Amateur Radio Club	204 Myers St, Geelong,	3220. Tel 052 21 3658
Lee de Vries VK3PK	Geelong Amateur Radio Club	215 Swan Bay Rd, Wallington,	3221. Tel 052 50 1105 (AH)
Tom Evans VK3EGM	Colac Amateur Radio Club	PO Box 3, Cororooke,	3254. Tel 052 33 1412
Maggie Iaquinto VK3CFI	Colac Amateur Radio Club	PO Box 3, Cororooke,	3254. Tel 052 32 1118 (AH)
Rob Spalding VK3ERS	Colac Amateur Radio Club	PO Box 3, Cororooke,	3254. Tel 052 33 1412
Bill Bell VK3WK	Warrnambool R & E Club	PO Box 724, Warrnambool,	3280. Tel 055 65 9348 (BH)
Bill Dennis VK3XE	Warrnambool R & E Club	5 Karana Dve, Warrnambool,	3280. Tel 055 62 9132
Mona Swinton VK3BRE	Warrnambool R & E Club	PO Box 724, Warrnambool,	3280 Tel 055 62 6016
Trevor Dyson VK3DTV	Warrnambool R & E Club	RMB 5280, Yambuk,	3285. Tel 055 68 4228 (AH)
Ian Mason VK3DNQ	Warrnambool R & E Club	PO Box 10, Yambuk,	3285. Tel 055 68 4214
Harold Benson VK3VSX	Hamilton & District RC	PO Box 188, Hamilton,	3300. Tel 055 23 4773

Steve Curtis VK3CAX	Hamilton & District RC	PO Box 188, Hamilton,	3300. Tel 055 72 1355 (BH)
Ray Downes VK3ERD	Hamilton & District RC	PO Box 188, Hamilton,	3300. Tel 055 78 6352
Keith Heemskerk VK3AIH	Hamilton & District RC	PO Box 188, Hamilton,	3300. Tel 055 23 1977 (BH)
Reg Carter VK3CAZ	BARG	PO Box 216E, Ballarat East,	3350. Tel 053 41 7585 (AH)
Gordon Cornell VK3FGC	BARG	PO Box 216E, Ballarat East,	3350. Tel 053 39 2427 (AH)
Tom George VK3DMK	BARG	PO Box 216E, Ballarat East,	3350. Tel 053 32 7234 (BH)
Ian McDonald VK3AXH	BARG	PO Box 216E, Ballarat East,	3350. Tel 053 31 1317 (BH)
Charlie Stewart VK3DCS	BARG	PO Box 216E, Ballarat East,	3350. Tel 053 31 7425
Andy Squires VK3DTO	Horsham Amateur Radio Club	PO Box 720, Horsham,	3401 Tel 053 82 1439 (BH)
David Timms VK3YLV	Horsham Amateur Radio Club	PO Box 720, Horsham,	3401 Tel 053 82 5399 (BH)
Mark Weaver VK3KZZ	Horsham Amateur Radio Club	PO Box 720, Horsham,	3401 Tel 053 81 1711 (BH)
Leon Reichelt VK3KIT		PO Box 654, Horsham,	3402. Tel 053 84 8219 (AH)
Wally Maxwell VK3MJW	Sunbury ARC Inc	20 K[illegible]ore Close, Sunbury,	3429 Tel 03 744 6020
Ian Morris VK3DVO	Sunbury ARC Inc	PO Box 915, Sunbury,	3429 Tel 03 744 4326 (AH)
Craig Norris VK3TCN	Sunbury ARC Inc	PO Box 915, Sunbury,	3429 Tel 054 28 4154 (AH)
John Nunan VK3IC	Sunbury ARC Inc	PO Box 915, Sunbury,	3429. Tel 03 744 2506 (AH)
George Loft VK3AGM	Midland ARC Inc	28 Lawrence Street, Castlemaine,	3450. Tel 054 72 3476 (AH)
Alan Robinson VK3CUG	Midland ARC Inc	'Kerrimuir' RSD 181, Barkers Creek,	3451. Tel 054 74 2121
Maurie Milani VK3CWB	Sunraysia Amateur Exams	PO Box 30, Mildura,	3502. Tel 050 22 2120 (AH)
Peter Milne VK3PM	Sunraysia Amateur Exams	PO Box 30, Mildura,	3502. Tel 050 24 5814 (AH)
Watty Cameron VK3WMC	Midland ARC Inc	166 McKenzie Street West, Golden Square,	3555. Tel 054 47 0560 (AH)
Colin Lelean VK3CWL	Midland ARC Inc	11 Mathrick Street, Eaglehawk,	3556. Tel 054 46 9995 (AH)
Rex James VK3OF	Swan Hill & District ARC	PO Box 682, Swan Hill,	3585 Tel 050 33 1032
Daryl Manley VK3AMJ	Swan Hill & District ARC	PO Box 682, Swan Hill,	3585 Tel 050 32 1427
Dave Duff VK3JRA	Shepparton & District ARC	6 Yarramundi Crt, Murchison,	3610. Tel 058 26 2586 (AH)
George Jackson	Wodonga TAFE	Electronics Dept, 15 McKoy St Wodonga,	3690. Tel 060 55 6517 (BH)
Reg Jones VK3GC	Wodonga TAFE	Electronics Dept, 15 McKoy St Wodonga,	3690. Tel 057 56 2230 (AH)
Chris Solly	Wodonga TAFE	Electronics Dept, 15 McKoy St Wodonga,	3690. Tel 060 55 6517 (BH)
Peter O'Bryan VK3MU		PO Box 180, Yarrawonga,	3730. Tel 057 44 2176 (AH)
Hilton Younger VK3AHY		10 Witt St, Yarrawonga,	3730. Tel 057 44 3768
Derek Thurgood VK3DD	Healesville ARG Inc	PO Box 234, Yarra Glenn,	3775. Tel 03 730 1557 (AH)
Phil Hingeley VK3IN	Healesville ARG Inc	27 Westmount Rd, Healesville,	3777. Tel 059 62 2832
Graeme Tremellen VK3GPT	Healesville ARG Inc	PO Box 285, Healesville,	3777. Tel 059 62 4111
Gavin Hobbs VK3TLN	Healesville ARG Inc	PO Box 105, Cockatoo,	3781 Tel 059 68 8482
John Hill VK3WZ		6 Cumberland Way, Endeavour Hills,	3802. Tel 03 700 5428
Graeme Brown VK3BXG	VK3 Eastern Zone Education	RMB 8375 Pryor Rd, Drouin,	3818. Tel 056 23 1227 (BH)
Colin Dyason VK3PJ	VK3 Eastern Zone Education	66 Colquhoun Blvd, Warragul,	3820. Tel 056 23 4655 (BH)
Bernard Henne VK3YTT	VK3 Eastern Zone Education	12 Ash St, Morwell,	3840 Tel 051 34 4275 (AH)
Peter Freeman VK3KAI	VK3 Eastern Zone Education	PO Box 273, Churchill,	3842 Tel 051 22 2550 (AH)
Henk Pillekers VK3CAQ	VK3 Eastern Zone Education	PO Box 65, Churchill,	3842. Tel 051 22 1885 (AH)
Brian Young VK3BBB	VK3 Eastern Zone Education	48 Washington St, Traralgon,	3844. Tel 051 76 1167
Patrick Bond VK3GEE		PO Box 87, Rosedale,	3847. Tel 051 99 2811
George Hoddinott VK3AYI	WIA East Gippsland Zone	Lot 23 Acacia Rd, Raymond Island,	[illegible] Tel
Kevin McGrath VK3EQM	WIA East Gippsland Zone	12 Government Rd, Paynesville,	3880. Tel 051 56 6938
Bob Neal VK3ZAN	WIA East Gippsland Zone	76 Langford Pde, Paynesville,	3880. Tel 051 56 7654
John Piovesan VK3GU	WIA East Gippsland Zone	15 Gilsenan St, Paynesville,	3880. Tel 051 56 6110
Bob Dickinson VK3BLD		94 Dunlop St, Bittern,	3918. Tel 059 83 9162
Steven Mathias VK3ZXR		3/95 Lorimer St, Crib Point,	3919. Tel 059 83 6197 (AH)
Frank Feldman VK3BC	Southern Peninsula Radio Club	30 Armstrong Rd, McCrae,	3938. Tel 059 86 2031
Vic Vickery VK3DEA	Southern Peninsula Radio Club	11 Flamingo Rd, Rosebud West,	3940. Tel 059 86 1327
Barry Wilton VK3XV		PO Box 260, Cranbourne,	3977 Tel
Lindsay Allen VK3LFA	Community D/L Wonthaggi Inc	13 Epsom St, Wonthaggi,	3995. Tel 056 72 2563
Colin Thomson VK3VBU	Community D/L Wonthaggi Inc	20 Fuller Rd, Wonthaggi,	3995. Tel 056 72 3144
Ted Trinder VK3JMT	Community D/L Wonthaggi Inc	1 Campbell St, Wonthaggi,	3995. Tel 056 72 2307
Ted Raven VK4KRR	QRV Exam Service	22 David St, Toombul,	4012. Tel 07 266 6197
Bob Godfrey VK4BOB	Department of Education QLD	20 Buckra St, Bracken Ridge,	4017 Tel 07 269 5380 (AH)
Rodger Bingham VK4HD	Redcliffe Radio Club	PO Box 20, Woody Point,	4019 Tel 074 96 4553
Peter Breed VK4PB	Redcliffe Radio Club	PO Box 20, Woody Point,	4019 Tel 07 284 1960
John Presotto VK4WX	Redcliffe Radio Club	PO Box 20, Woody Point,	4019 Tel 07 283 1329 (AH)
Bob Neville VK4ACL	QRV Exam Service	124 Roscommon Rd, Boondall,	4034 Tel 07 265 3104
Ron Everingham VK4EV	Brisbane ARC	30 Hunter St, Everton Park,	4053. Tel 07 355 4308 (AH)
Garry Hawgood VK4KE	Radio Amateurs Group	9 Ararat St, Riverhills,	4074. Tel 07 279 0278
Murray Kelly VK4AOK	WIAQ Examinations Service	29 Molonga Tce, Graceville,	4075 Tel 07 379 3307
Steve Vaughan VK4YEK	Brisbane ARC	PO Box 300, Darra,	4076. Tel 07 849 8156
George Nelson VK4WZ	Brisbane ARC	96 Ekibin Rd, Annerley,	4103. Tel 07 848 2456
Roy O'Malley VK4ZQ	WIAQ Examinations Service	Emtronics QLD P/L, 416 Logan Rd Stones Cnr,	4120. Tel 07 394 2555 (BH)
Keith Griffin VK4IO	Bayside District ARS Inc	20 Kordick St, Carina,	4152. Tel 07 398 6013 (AH)
Ian Campbell VK4TK	Bayside District ARS Inc	PO Box 411, Capalaba,	4157 Tel 07 824 1518 (AH)
Roy Mahoney VK4BAY	Bayside District ARS Inc	PO Box 411, Capalaba,	4157 Tel 07 396 1655
George Roberts VK4BSH	Bayside District ARS Inc	PO Box 411, Capalaba,	4157 Tel 07 206 7298 (AH)
Alf Brown VK4AEJ	Bayside District ARS Inc	114 Panorama Dve, Thornlands,	4164. Tel 07 286 4779
Len Holbrok VK4DDK	Gold Coast ARS Inc	PO Box 1837, Southport,	4215 Tel 075 32 5255 (BH)
Nic Chantler VK4DIT	Gold Coast ARS Inc	PO Box 6620, Gold Coast Mail Centre,	4217 Tel 075 39 6609 (AH)
John Harvey VK4XJH	Gold Coast ARS Inc	PO Box 5159, Gold Coast Mail Centre,	4217 Tel 075 32 0400 (BH)
Robert White VK4TRW	Gold Coast ARS Inc	5 McCubbin Crt, Burleigh Heads,	4220. Tel 075 35 2222 (AH)
George Walters VK4VGW	Gold Coast ARS Inc	64 Bateke Rd, Mt Tamborine,	4272. Tel 075 45 2148
Mal Beck	Concordia College Toowoomba	154 Stephen St, Toowoomba,	4350. Tel 076 36 1700 (BH)
Graham Weier VK4AGN		C/- 58 Water St, Toowoomba,	4350. Tel 076 39 2219 (BH)
Cliff Jenkins VK4QJ		'Weer Heer' MS 1073, Crows Nest,	4355. Tel 076 98 1223
Bob Harper VK4KNH	Cunningham Radio Club	158 Wood St, Warwick,	4370. Tel 076 61 1273 (AH)
John Moulder VK4YX	Cunningham Radio Club	PO Box 323, Warwick,	4370. Tel 076 61 3131 (BH)
Graham Rayner VK4GDR	Cunningham Radio Club	PO Box 93, Glen Aplin,	4381 Tel 076 83 4336 (AH)
Neil Holmes VK4NF	Dalby & District ARC	15 Bunya St, Dalby,	4405. Tel 076 62 4950
Reg Kerslake VK4AQU	Dalby & District ARC	88 Patrick St, Dalby,	4405. Tel 076 62 2193

Margaret Schwerin VK4OE	Dalby & District ARC	'Rosedale' MS 902, Dalby,	4405 Tel 076 62 3934
David Jones VK4OF	WIAQ Examinations Service	18 Browning Crt, Strathpine,	4500 Tel 07 205 1561
Nev Mills VK4KOP	WIAQ Examinations Service	49 Viscount St, Bray Park,	4500 Tel 07 205 4532 (AH)
Bill Yates VK4YWY	QRV Exam Service	29 Brittany St, Petrie,	4502 Tel 07 285 1462 (BH)
Brian Berry VK4BDB	WIAQ Examinations Service	42 Laver St, Morayfield,	4506 Tel 074 98 5754 (AH)
Charlie Strong VK4YZ	Redcliffe Radio Club	St M's Old Toorbul Pt Rd, Caboolture,	4510 Tel 074 95 1565
Ken Hanby VK4FS	Sunshine Coast ARC	17 Kig Hts 14 Queen St, Caloundra,	4551 Tel 074 91 5532
Max Vincent VK4ZMV	Odbrook Pty Ltd	PO Box 10, Golden Beach,	4551 Tel 074 92 2710
Jack Cornes VK4VAH	Gympie Amateur Radio Club Inc	43 Mellor St, Gympie,	4570 Tel 074 82 2443
Fran Walker VK4NSN	Gympie Amateur Radio Club Inc	86 Noosa Rd, Gympie,	4570 Tel 074 82 5325
Roy Winchester VK4IRW	Gympie Amateur Radio Club Inc	Lot 4 Jeremy Rd, Gympie,	4570 Tel 074 82 7823
Ron MacNamara VK4ESC	Sunshine Coast ARC	23 Callitris Cres, Marcus Beach,	4573 Tel 074 48 1886
Bruce Bussenschutt VK4OR	Sunshine Coast ARC	2 Dewrang Pl, Wurtulla Sunshine Coast,	4575 Tel 074 93 1380
Ian Mowat VK4ZS		MS 648, Yarraman,	4614 Tel 071 63 8261
Gerry Fulton VK4GJ	Hervey Bay Amateur Radio Club	PO Box 829, Hervey Bay,	4655 Tel 071 28 3232
Gray Taylor VK4OH	Hervey Bay Amateur Radio Club	PO Box 526, Hervey Bay,	4655 Tel 071 25 7167
Ted Watson VK4EAW	Hervey Bay Amateur Radio Club	PO Box 829, Hervey Bay,	4655 Tel 071 28 3489
Reg Wheller VK4ARW	Hervey Bay Amateur Radio Club	PO Box 829, Hervey Bay,	4655 Tel 071 28 1383
Ken Blatchford VK4BKB	BARC Inc Exam Service	9 Que Hee St, Bundaberg,	4670 Tel 071 51 3195
Gerard Feerick VK4YK	BARC Inc Exam Service	M/S 108 Hoffmans Rd, Burnett Heads,	4670 Tel
Bob Millgate VK4ADZ	BARC Inc Exam Service	9 Chapman St, Booloolah Bundaberg,	4670 Tel 071 52 7482
Bernie Smallman VK4BFS		6 Williams St, MS 108 Burnett Heads,	4670 Tel 071 59 4483
Clem Steggink VK4FD	BARC Inc Exam Service	38 Moncrieff St, Bundaberg,	4670 Tel 071 52 1876
John Lobie VK4DJL	Gladstone Exam Service	98 Barney St, Gladstone,	4680 Tel 079 79 2291 (AH)
Noela MacDonald VK4ANJ	Gladstone Exam Service	98 Barney St, Gladstone,	4680 Tel 079 72 5494 (AH)
Vic MacDonald VK4CA	Gladstone Exam Service	98 Barney St, Gladstone,	4680 Tel 079 72 5494 (AH)
Merv Deakin VK4DV		PO Box 380, Rockhampton,	4700 Tel 079 34 0193
Lyle Dobbs VK4ALD	WIAQ CQ Branch Rockhampton	265 Carpenter St, Rockhampton,	4701 Tel 079 31 2775 (BH)
Nick Quigley VK4CNQ	WIAQ CQ Branch Rockhampton	265 Carpenter St, Rockhampton,	4701 Tel 079 31 2388 (BH)
Clive Salt VK4ACC	WIAQ CQ Branch Rockhampton	265 Carpenter St, Rockhampton,	4701 Tel 079 28 1173 (AH)
David Wilson VK4UN	Central Highlands ARC	6 Gum St, Tieri,	4709 Tel 079 84 8442
Maurie Wright VK4YEN	Central Highlands A R C	25 Cassia Street, Tieri,	4709 Tel 079 84 8384 (AH)
Don Blanch VK4ZFB	Biloela ARC	109 Grevillea Street, Biloela,	4715 Tel
Glyn Gibbings-Johns VK4LA	Biloela ARC	PO Box 966, Biloela,	4715 Tel 079 92 3381
Hank Hahn VK4VCD	Biloela ARC	25 Don Street, Biloela,	4715 Tel 079 92 1386
Mark Haseman VK4CMH	Biloela ARC	PO Box 315, Biloela,	4715 Tel 079 92 2491
John Petersen VK4AXA	Central Highlands ARC	48 Littlefield St, Blackwater,	4717 Tel 079 82 5126
Jim Storch VK4JVS		PO Box 147, Blackwater,	4717 Tel 079 82 6279
James West		41 Blain St, Blackwater,	4717 Tel 079 82 6756 (AH)
Lloyd West VK4QE		41 Blain St, Blackwater,	4717 Tel 079 82 6756 (AH)
Geoff Bonney VK4GI	TAFE College Emerald	Capricorn Hwy, Emerald,	4720 Tel 079 82 3699 (BH)
Bob Lee VK4CWL	Central Highlands ARC	PO Box 617, Emerald,	4720 Tel 079 82 1096 (BH)
Pete Foster VK4COU		Cardbeign St, Springsure,	4722 Tel 079 86 1882
Allan Abbott VK4ABP	Central Highlands ARC	PO Box 493, Longreach,	4730 Tel 076 58 3111 (BH)
Lyle Farraher VK4KXM	Central Highlands ARC	PO Box 75, Longreach,	4730 Tel 076 58 3793 (AH)
Ed Roache VK4KAA	Central Highlands ARC	48 Wompoo Rd, Longreach,	4730 Tel 076 58 3062
Ron Graham VK4BRG	Central Highlands ARC	Box 323, Sarina,	4737 Tel 079 56 1155
Wal Douglas VK4AIV	Mackay Amateur Radio Assoc	PO Box 1065, Mackay,	4740 Tel 079 42 1615 (AH)
John Gillespie VK4MTF	Mackay Amateur Radio Assoc	PO Box 1065, Mackay,	4740 Tel 079 55 2006 (AH)
George Glendinning VK4AJL	Mackay Amateur Radio Assoc	PO Box 1065, Mackay,	4740 Tel 079 59 2436 (AH)
John James VK4CMA	Mackay Amateur Radio Assoc	PO Box 1065, Mackay,	4740 Tel 079 55 2333 (AH)
Keith Carter VK4CKC	Bowen & Collinsville ARC	22 Soldiers Rd, Bowen,	4805 Tel 077 86 2497
Brian Winterburn VK4BOW		7 Hay St, Bowen,	4805 Tel 077 86 2367
Alan Stephenson VK4PS	Townsville ARC Inc	PO Box 5315 MSO, Townsville,	4810 Tel 077 71 2513
John Stevens VK4AFS	Townsville ARC Inc	GPO Box 419, Townsville,	4810 Tel 077 22 1113 (BH)
Ian Sutton VK4ZT	Townsville ARC Inc	PO Box 964, Townsville,	4810 Tel 077 71 1211 (BH)
Roger Cordukes VK4CD	Townsville ARC Inc	1620 Ross River Rd, Kelso,	4815 Tel 077 74 0221 (AH)
Bruce Jones VK4KIT	Mount Isa & District ARG	57 Brett Ave, Mount Isa,	4825 Tel 077 43 5618 (AH)
Robert Mackie VK4SWR	Mount Isa & District ARG	PO Box 1429, Mount Isa,	4825 Tel 077 43 0123 (AH)
Keith Noll VK4AKA	Mount Isa & District ARG	23 Abel Smith Pde, Mount Isa,	4825 Tel 077 43 3116 (AH)
Roger Wood VK4ARZ	Mount Isa & District ARG	PO Box 1715, Mount Isa,	4825 Tel 077 43 5935 (AH)
Ted Golledge VK4AVG	Tropical Coast ARC	PO Box 1019, Innisfail,	4860 Tel 070 61 4517 (AH)
John Mahoney VK4JON	Cairns Amateur Radio Club Inc	PO Box 194, Innisfail,	4860 Tel 070 61 3857
Les Meier VK4EMI	Tropical Coast ARC	48 Laurie St, Innisfail,	4860 Tel 070 61 2932 (AH)
Graham Bennett VK4FGB	Cairns Amateur Radio Club Inc	PO Box 1914, Cairns,	4870 Tel 070 54 1448
Pat Laurenzi VK4MP	Cairns Amateur Radio Club Inc	PO Box 1426, Cairns,	4870 Tel 070 54 4157 (AH)
Chris Parr VK4ANI	Cairns Amateur Radio Club Inc	PO Box 1215, Cairns,	4870 Tel 070 51 0452 (AH)
Wilf Booth VK4ZNZ	Tableland Radio Club	MS 1318 McLean Rd, Yungaburra,	4872 Te. 070 95 3888
Tom Debel VK4NIM	Tableland Radio Club	PO Box 13, Kairi,	4872 Te. 070 95 8217
Rene Brank VK4MES	Thursday Island ARC	PO Box 410, Thursday Island,	4875 Tel 070 69 1854 (AH)
Rex East VK4MIA	Thursday Island ARC	PO Box 418, Thursday Island,	4875 Tel 070 69 1679
Bill Lochridge VK4WL	Torres Straits Examinations	C/ Post Office, Thursday Island,	4875 Tel 070 69 1446 (AH)
Ron Goodhew VK4EMF	Tableland Radio Club	PO Box 253, Mareeba,	4880 Tel 070 92 2888 (BH)
Aubrey McKibben VK4AFO	Tableland Radio Club	PO Box 102, Malanda,	4885 Tel 070 96 5962 (AH)
Chuck Waite VK5CQ	WIA (SA Div) Inc	GPO Box 222, Adelaide,	5001 Tel 08 289 2146 (AH)
Graeme Bottger VK5AHQ	Port Adelaide Radio Club	68 Alma Terrace, Woodville West,	5011 Tel 08 45 7465 (AH)
Harry Hillard VK5AHH	Port Adelaide Radio Club	PO Box 265, Port Adelaide,	5015 Tel 08 49 7664
John McKellar VK5BJM	Port Adelaide Radio Club	5 Diosma Cres, Lockleys,	5032 Tel 08 43 8386 (AH)
Christine Taylor VK5CTY	Taylor Radio Group	16 Fairmont Avenue, Black Forest,	5035 Tel 08 293 5615
Geoff Taylor VK5TY	Taylor Radio Group	16 Fairmont Avenue, Black Forest,	5035 Tel 08 293 5615
Rob Gurr VK5RG		PO Box 35, Daw Park,	5041 Tel 08 276 4547
Donald McDonald VK5ADD	WIA (SA Div) INC	6 Whittier Ave, Marion,	5043 Tel 08 276 1251
Phil Day VK5QT	Adelaide Hills ARS Inc	15 Main Rd, Belair,	5052 Tel 08 366 2214 (BH)
Murray Burford VK5ZQ	WIA (SA Div) INC	261 Belair Rd, Torrens Park,	5062 Tel 08 276 3393

Hans Smit VK5YX	Adelaide Hills ARS Inc	6 Jeffrey St, Hawthorn,	5062. Tel 08 271 5350 (AH)
Rowland Bruce VK5OU	WIA (SA Div) INC	42 Gleneagles Rd, Mt Osmond,	5064. Tel 08 379 4584
George Lindop VK5BGL	Port Adelaide Radio Club	28 Dyott Ave, Hampstead Gardens,	5086. Tel 08 261 5910
Rick Grivell VK5GV	North East Radio Club	43 Lincoln Cres, Pooraka,	5095 Tel 08 262 5152 (AH)
Bill Wardrop VK5AWM	WIA (SA Div) INC	PO Box 303, St Agnes,	5097 Tel 08 251 2154 (AH)
Rob Gunnourie VK5FI	WIA (SA Div) INC	99 Maxwell Rd, Ingle Farm,	5098. Tel 08 264 6581
Ivan Huser VK5QV	South East Radio Group Inc	PO Box 1103, Mount Gambier,	5290. Tel 087 25 5514
Trevor Niven VK5NC	South East Radio Group Inc	PO Box 1103, Mount Gambier,	5290. Tel 087 25 5593 (AH)
Kevin O'Rorke VK5OA	South East Radio Group Inc	PO Box 1103, Mount Gambier,	5290. Tel 087 25 3079
Bert Trupp VK5BVN	South East Radio Group Inc	PO Box 1103, Mount Gambier,	5290. Tel 087 24 9826 (AH)
Clive Harman VK5ACH	Riverland Amateur Radio Club	PO Box 628, Renmark,	5341 Tel 085 86 4204
Mike Mackintosh VK5CK	Riverland Amateur Radio Club	PO Box 646, Renmark,	5341 Tel 085 84 7101 (BH)
John Ruston VK5ARK	Riverland Amateur Radio Club	PO Box 98, Renmark,	5341 Tel 085 86 6127
Hugh Lloyd VK5BC	Riverland Amateur Radio Club	PO Box 743, Berri,	5343 Tel 085 82 2690
Graham Johnston VK5SU	Mid North Repeater Group	25 Square St, Port Pirie,	5540. Tel 086 32 4122 (BH)
Keith Pettman VK5NAX	Mid North Repeater Group	31 Henry St, Port Pirie,	5540. Tel 086 32 3273 (AH)
Leo Vette VK5NLV		36 Ferme St, Port Pirie,	5540. Tel 086 33 0485 (AH)
David Bice VK5QU	Moonta Scout Group ARC	PO Box 133, Moonta,	5558. Tel 088 25 2263
John Vayne VK5BL	Moonta Scout Group ARC	PO Box 133, Moonta,	5558. Tel 088 25 2798
Jack Kleinrahm VK5AJK	Lower Eyre Peninsula ARC Inc	11 Luke St, Port Lincoln,	5606. Tel 086 82 1466 (BH)
Jack Martin VK5EJ	Lower Eyre Peninsula ARC Inc	PO Box 937, Port Lincoln,	5606. Tel 086 82 3131 (AH)
John Plevin VK5AEP	Lower Eyre Peninsula ARC Inc	18 Wandana Ave, Port Lincoln,	5606. Tel 086 82 3161
Peter Baker VK5BWI	WHYCOM SA	49 Basyyan Cres, Whyalla Stuart,	5608. Tel 086 45 2460 (BH)
Stuart Crowther VK5BWC	Whyalla Amateur Radio Club	68 Acacia Dve, Whyalla Stuart,	5608. Tel 086 45 4331 (AH)
Joe Nebl VK5PWC	Whyalla Amateur Radio Club	C/- PO Box 444, Whyalla Norrie,	5608. Tel
Alan Gilchrist VK5BWG	Port Augusta ARC	6 Kinnear Street, Port Augusta,	5700. Tel 086 43 6455 (AH)
Peter Horgan VK5BWH	Port Augusta ARC	6 Kinnear Street, Port Augusta,	5700. Tel 086 42 2363 (AH)
Bill Offler VK5BWO	Port Augusta ARC	6 Kinnear St, Port Augusta,	5700. Tel 086 42 2855 (AH)
Phil Jamieson VK6ZPP	Northern Corridor Radio Group	11 Bromley Place, Kingsley,	6026. Tel 09 409 1156 (AH)
Bryce Erskine VK6KBE	Northern Corridor Radio Group	90 Balga Ave, Balga,	6061 Tel 09 349 9489
Phil Street VK6KS	Northern Corridor Radio Group	PO Box 97, Mirrabooka,	6061. Tel 09 344 5241 (AH)
Dianne Cousins VK6BC		2 Nottingham St, East Victoria Park,	6101. Tel 09 361 3985
Glenn Cousins VK6AUZ		2 Nottingham St, East Victoria Park,	6101 Tel 09 361 3985
Clyde Hillsdon VK6ZCH		3 Youngs Place, Parmelia,	6167. Tel 09 419 5764 (AH)
Frank Langford VK6BLA	Peel Amateur Radio Group Inc	10 Clipper Way, Halls Head,	6210. Tel 09 581 5028
Rev Suter VK6SA	The Amateur Radio Exam Centre	PO Box 261, Mandurah,	6210. Tel
Con Murphy VK6PM		PO Box 88, Yarloop,	6218. Tel 097 33 1978
Allen Byrne VK6OT	Bunbury Radio Club Inc	C/- PO Box 31, Bunbury,	6230. Tel
Bill Harrison VK6WJH	Bunbury Radio Club Inc	PO Box 31, Bunbury,	6230. Tel 097 34 4374 (AH)
Barry Mitchell VK6HX	Bunbury Radio Club Inc	9 Henley Dve, Bunbury,	6230. Tel 097 91 1599 (AH)
Murray Peacock VK6YD	Bunbury Radio Club Inc	PO Box 31, Bunbury,	6230. Tel 097 21 5442
John Thornborough VK6AJJ	Bunbury Radio Club Inc	PO Box 31, Bunbury,	6230. Tel 097 97 1126
Peter Havord VK6BRN	Southern Electronics Group	PO Box 1491, Albany,	6330. Tel 098 41 8028 (AH)
Bill Hoare VK6YWH	Southern Electronics Group	3 Finlay St, Albany,	6330. Tel 098 41 6315
Aubrey Keightley VK6XY	Southern Electronics Group	242 Serpentine Rd, Albany,	6330. Tel 098 41 3104
Tom Reed VK6TR	Southern Electronics Group	Lot 25 Shellbay Rd, Lower King,	6330. Tel 098 447395
Ron Howrie VK6ANR	Goldfields ARG	PO Box 1281, Kalgoorlie,	6430. Tel 090 91 4457
Alan Ransley VK6AJO	Goldfields ARG	214 McDonald St, Kalgoorlie,	6430. Tel 090 21 7746 (AH)
Allan Juggins VK6QJ	Esperance ARS	PO Box 965, Esperance,	6450. Tel 090 71 3090 (AH)
Graeme Smith VK6ATS	Esperance ARS	12 Young Place, Esperance,	6450. Tel 090 71 2801 (AH)
Bob Marlow VK6PJ	Geraldton Amateur Radio Club	PO Box 2004, Geraldton,	6530. Tel 099 21 1367 (AH)
Gordon Wilhams VK6IU		PO Box 259, Northampton,	6535 Tel 099 34 1259
Steve Hill VK6PA	ARS Northwest Australia Inc	PO Box 410, Wickham,	6720. Tel 091 85 4510 (AH)
Dave Holt VK6YA	ARS Northwest Australia Inc	PO Box 410, Wickham,	6720. Tel 091 87 1926
Peter Dowd VK7PR	WIA Tasmanian Division	12 Susan Pde, Lenah Valley,	7008. Tel
Reg Emmett VK7KK	WIA TAS DIV Southern Branch	PO Box 26, Rokeby,	7019. Tel 002 48 6824 (AH)
Graeme Reardon VK7ZGG	WIA TAS DIV Northern Branch	2 Trent St, Youngtown,	7249. Tel 003 44 6636 (AH)
Bill Bower VK7AV	WIA TAS DIV Northern Branch	40 Amy Rd, Launceston,	7250. Tel 003 44 1584 (AH)
Mike Collinson VK7MA	WIA TAS DIV Northern Branch	PO Box 986, Launceston,	7250. Tel 003 26 0751 (BH)
Ron Churcher VK7RN	WIA Tasmanian Division	PO Box 277, Devonport,	7310. Tel 004 24 6366 (AH)
Tony Clayton VK7AH	WIA Tasmanian Division	10 Wrenswood Dve, Quoiba,	7310. Tel 004 24 5375 (AH)
Phil Harbeck VK7PU	WIA Tasmanian Division	14 Kennedy St, Burnie,	7320. Tel 004 31 3020
Clarrie Hilder VK7HC	WIA Tasmanian Division	5 Speed St, Cooee,	7320. Tel 004 31 8211
Shane Lynd VK7KHZ	WIA Tasmanian Division	14 Read St, Tullah,	7321 Tel 004 73 4256 (AH)
Steve Bush VK7EQ	WIA Tasmanian Division	PO Box 123, Somerset,	7322. Tel 004 35 1043
Dick Van Beek VK7KVB	WIA Tasmanian Division	31 Beech Dve, Rosebery,	7470. Tel 004 73 1693 (AH)

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Don't buy stolen equipment — check the serial number against the WIA stolen equipment register first.

HF Predictions

Evan Jarman VK3ANI

The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for the five bands from 14 to 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 μV (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of μV in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50 μV at the receiver's input and the S-meter scale is 6 dB per S-point.

μ V in 50 Ohms	S-points	dB(μV)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4
0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

VK EAST The major part of NSW and Queensland.

VK SOUTH Southern-NSW, VK3, VK5 and VK7

VK WEST The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used to make these prediction is 64.2, next month's prediction is 63.0.

Last year alternative formats for the presentation were sought. No requests for alternatives were received, only requests not to change, so this data will continue in its present format with only slight changes for such things as type fonts. This month a graph showing the change in sunspot number over the last couple of years is included. It is provided by IPS Radio and Space Services, Department of Administrative Services.

The predicted sunspot number is shown to decline during this year.

This is an indication of average activity; the occasional exceptional band openings will be there for those who seek them.

ar

Tx : VK EAST Rx : Africa

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	14.0	7	9.8	7	4	-3	-16	-32
2	14.5	5	11.0	4	5	0	-10	-23
3	14.2	0	10.8	0	2	-2	-11	-23
4	16.7	2	12.6	-4	3	1	-4	-13
5	21 1	4	15.0	-7	3	4	2	-4
6	21.9	4	15.3	-9	2	4	2	-3
7	22.0	4	15.4	-9	2	4	2	-2
8	22.1	5	15.6	-7	3	5	3	2
9	21.0	6	15.4	-3	5	6	2	-4
10	19.6	7	15.2	1	7	6	1	7
11	18.1	8	14.5	6	8	5	-1	-11
12	16.6	10	13.3	10	9	4	-5	-17
13	15.6	13	12.4	14	10	3	-9	-23
14	14.8	18	11.7	19	11	1	-13	-29
15	14.1	23	11 1	23	11	0	-17	-37
16	13.5	26	10.5	24	10	-3	-22	..
17	12.9	28	10.0	24	8	-6	-27	..
18	12.4	29	9.4	23	6	-10	-32	..
19	12.0	30	9.1	22	4	-12	-36	..
20	12.7	29	8.7	24	7	-8	-30	..
21	12.1	26	8.3	19	3	-12	-35	..
22	11.7	20	8.1	14	0	-14	-36	..
23	11.5	14	8.0	10	-1	-15	-35	..
24	12.3	9	8.6	9	0	-10	-27	..

Tx : VK EAST Rx : Europe L/P

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11.2	-5	8.5	1	-2	-10	23	..
2	11.3	1	8.6	3	2	10	-25	..
3	11.3	3	8.7	5	-1	-11	-27	..
4	10.8	7	8.4	7	-3	15	34	..
5	9.9	10	7.8	6	7	-22	..	..
6	[illegible]	16	7.9	8	7	-24	..	..
7	11.9	24	9.4	17	2	-13	-34	..
8	15.6	22	12.3	25	15	4	10	27
9	15.5	21	11 8	23	16	8	3	-17
10	14.9	14	11.3	14	11	4	-6	-18
11	16.5	7	13.1	5	7	4	-3	-13
12	15.6	1	12.4	-2	2	0	-6	15
13	14.9	-5	12.0	-7	0	1	7	16
14	14.2	-10	11.1	-10	-2	2	-8	16
15	13.6	14	10.4	-11	3	3	-8	17
16	12.9	18	9.8	-11	-3	-4	-9	18
17	12.5	-19	9.4	-11	-3	-4	-10	19
18	13.2	-17	9.8	-12	3	3	9	17
19	15.3	-9	12.1	-14	3	-2	-6	13
20	17.4	-4	13.5	-15	-3	-1	-4	10
21	15.1	-7	11.6	-10	-2	-2	7	16
22	13.2	-9	10.1	5	-1	-4	12	-23
23	12.1	-9	9.2	2	-1	-6	16	-29
24	11.5	-8	8.7	0	-2	-8	20	-35

Tx : VK EAST Rx : Sth Pacific

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	29.9	25	24.8	33	36	35	32	27
2	30.5	25	25.2	34	36	35	32	28
3	30.5	26	25.1	35	37	36	33	28
4	30.2	26	24.7	37	38	37	33	29
5	29.5	27	24.1	39	40	37	33	28
6	28.4	28	23.1	43	42	39	34	28
7	26.9	30	21.8	49	45	40	34	27
8	25.3	32	20.4	50	45	39	33	25
9	23.6	33	18.9	50	44	38	30	21
10	22.0	34	17.6	49	42	36	27	17
11	21 1	35	16.8	49	42	35	25	14
12	20.3	35	16.0	48	40	33	23	12
13	19.3	36	15.2	48	39	31	20	8
14	18.2	37	14 2	46	37	28	17	4
15	17.2	38	13 3	45	35	26	13	0
16	16.0	39	12 3	44	32	22	8	-6
17	14 8	40	1. 3	42	29	17	2	-13
18	15.0	39	1 3	41	29	18	3	13
19	17.6	34	13.2	40	33	24	13	0
20	21 9	30	16.7	38	35	31	23	14
21	25 5	28	19.7	37	36	34	29	22
22	27 1	27	21 3	35	36	34	30	24
23	27 8	26	22.2	33	35	34	30	25
24	28.9	26	23.5	33	35	34	31	26

Tx : VK EAST Rx : Asia

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	28.6	13	22.1	12	19	20	18	14
2	28.4	12	21.6	10	18	19	17	12
3	28.8	12	22.4	10	18	19	17	13
4	29.4	13	22.3	11	19	20	18	14
5	30.2	13	23.0	13	21	22	20	16
6	30.6	15	24.0	17	23	24	22	18
7	29.4	16	23.9	22	26	25	22	17
8	28.0	18	23.4	30	30	28	23	17
9	26.7	20	2. 6	38	35	30	23	16
10	25.2	21	20.2	40	35	29	21	12
11	23.9	22	19.1	41	35	28	19	9
12	23.4	22	18.6	42	35	28	18	7
13	22.7	23	18.0	43	35	27	17	5
14	21.8	23	17 7	42	33	25	14	2
15	20.3	24	15 9	40	30	21	9	-4
16	19.0	24	14.8	38	27	17	3	-11
17	17.4	25	13.5	35	23	11	-5	-22
18	15.7	26	12.1	31	16	2	-17	-38
19	14.1	26	10.9	25	7	-10	-34	..
20	12.7	26	9.8	19	-2	-23	..	..
21	16.5	20	12.4	26	15	3	-13	32
22	23 8	16	18.4	25	24	21	13	5
23	27.0	15	21.5	29	23	22	18	13
24	27.4	14	22 1	25	21	21	17	12

Tx : VK EAST Rx : Mediterranean

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11.3	-2	8.6	2	-3	-13	-29	..
2	10.7	-11	8.2	-1	-4	-13	-29	..
3	14.1	-4	10.9	-3	0	-4	-13	-25
4	20.5	4	15.8	-9	2	4	1	-4
5	26.7	6	20.5	-15	1	6	7	5
6	28.9	8	21.9	-18	0	7	9	8
7	28.3	8	22.4	-17	1	7	9	8
8	27.3	8	22.2	-12	3	8	9	8
9	26.0	10	21.6	-4	8	11	11	7
10	24.5	12	19.8	4	13	14	11	7
11	22.9	15	18.4	14	18	16	12	5
12	21.5	18	17.1	22	22	18	11	3
13	20.7	21	16.4	30	26	20	11	1
14	19.9	24	15.8	35	28	20	10	1
15	19.1	25	15.5	36	27	19	8	-4
16	18.1	26	14.1	36	26	17	4	9
17	17.1	27	13.3	35	24	14	0	14
18	15.9	28	12.3	33	21	10	-5	-22
19	14.8	29	11.3	30	17	5	-12	-31
20	14.9	29	11.3	31	18	5	-11	-30
21	17.5	25	13.2	33	24	14	1	-14
22	14.5	21	11.1	22	12	1	-14	-32
23	13.9	16	10.8	15	8	-1	-16	34
24	13.7	9	10.4	9	4	-4	-18	-34

Tx : VK EAST Rx : USA/Caribbean

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	23.3	6	17.6	-6	5	7	5	0
2	21.0	8	15.9	1	8	8	3	-4
3	18.8	9	14.2	7	10	7	0	-10
4	17.0	12	12.8	13	11	5	-5	-18
5	16.0	16	12.0	18	12	3	-9	24
6	15.3	20	11.4	22	13	2	-13	31
7	14.6	24	11 1	25	13	0	-17	37
8	14.2	26	10.6	26	11	-2	-21	
9	13.8	27	10.4	26	10	-4	24	
10	12.6	29	9 5	22	4	-12	35	
11	10.9	30	8.3	16	-6	27		
12	10.6	31	8.2	14	-8	30		
13	13.3	28	9.9	25	8	-7	29	
14	14.5	27	11 2	28	14	1	-16	36
15	13.0	21	10.1	18	6	-7	-26	
16	16.1	16	12.4	18	13	6	-5	19
17	14.7	9	11.2	9	7	0	-11	25
18	14.7	3	11.1	2	3	-1	-10	23
19	17.2	2	13.0	-4	3	2	3	12
20	21.5	5	16.4	-11	2	5	3	-1
21	25.0	6	19.4	-15	1	5	6	3
22	26.3	6	20.4	-17	0	5	6	4
23	26.9	6	20.5	-16	1	6	7	5
24	25.6	6	19.4	-12	3	6	6	3

Tx : VK SOUTH Rx : Africa

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	15.0	13	10.3	13	8	0	-12	28
2	15.1	.1	11.4	10	8	2	9	22
3	17.8	9	14.0	7	9	6	1	10
4	22.0	8	15.6	2	9	9	5	-1
5	22.7	7	16.2	2	7	8	5	0
6	22.8	7	16.3	-4	6	7	5	0
7	22.8	6	16.2	-4	6	7	5	0
8	22.6	7	16.1	-4	6	7	5	0
9	22.3	7	15.8	-1	7	8	5	1
10	21.4	8	15.	3	9	9	4	2
11	20..	.0	14..	7	11	8	2	-6
12	18.4	1.	12.9	.1	1.	7	0	-11
13	16.9	13	1.8	15	12	5	5	-18
14	15.6	7	10.9	19	12	3	-10	-26
15	14.6	22	10.2	23	12	0	-16	34
16	13.8	25	9.5	24	10	3	22	..
17	13.2	27	9.2	23	8	-6	27	
18	12.5	28	8.8	22	5	-1.	33	
19	12.2	29	8.6	22	4	-13	36	
20	.2 3	29	8.6	22	4	-13	36	
21	12.9	28	9.0	23	7	-8	29	..
22	12.5	24	8.7	19	4	-10	-32	
23	12.4	19	8.7	13	2	11	-31	
24	13 2	15	9.3	14	4	-6	-23	..

Tx : VK SOUTH Rx : Sth Pacific

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	20.6	15	16.6	20	19	14	5	-6
2	20.7	15	17 1	20	19	14	5	5
3	20.7	16	17.0	21	20	15	5	5
4	20.6	16	16.9	23	21	15	5	-6
5	20.5	17	16.8	26	22	16	6	-6
6	20.2	19	16.5	30	24	17	6	-7
7	19.7	22	16.0	34	26	17	4	-9
8	18.7	24	15.1	37	26	15	1	-15
9	17 4	26	14.0	36	23	11	-5	23
10	16.1	27	12.9	34	19	6	-13	33
11	14.8	28	11.9	31	14	-1	-22	
12	14.0	29	11.1	29	10	-6	30	
13	13.3	30	10.6	26	6	-12	37	..
14	12 7	31	10.0	24	3	-17	..	..
15	12.2	31	9 5	21	1	-22	..	..
16	11.6	32	9.0	19	5	-27	..	..
17	11.1	32	8.5	16	-9	-33	..	
18	10.7	32	8.1	13	13	37		
19	11.3	23	8.4	13	-8	-29		
20	13.0	18	9.7	16	2	13	35	..
21	15 7	17	11 9	19	11	1	15	33
22	18.1	16	13.9	20	16	9	-3	-17
23	19.6	15	15.3	20	18	12	2	-10
24	20.2	15	16.0	20	18	13	3	-8

Tx : VK WEST Rx : Europe L/P

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	10.2	19	7.9	-4	-6	-12	-25	..
2	10.2	15	7 9	3	-6	-14	-28	..
3	10.2	12	7.9	-2	-7	-16	-32	..
4	9 7	9	7 6	-1	-9	-20	-38	..
5	9.0	7	7 1	1	-13	27	..	..
6	9 1	2	7.2	1	-14	29		
7	10.5	7	8.4	4	-8	23	..	.
8	13.2	12	10.5	13	2	9	25	
9	16.3	14	13.0	17	11	2	10	24
10	16.2	16	12.6	18	12	5	-6	19
11	13 1	12	10.1	11	3	-6	21	-38
12	12.6	4	9.7	5	0	-8	21	-37
13	15.3	2	10.4	0	2	-1	-10	-21
14	14.4	-5	9.8	-6	-1	-4	-11	21
15	13.7	-11	9.5	-9	-4	-5	-12	-22
16	13 1	-16	8.9	11	-5	-6	-12	-22
17	12.4	20	8.5	12	5	-6	-13	-22
18	12.0	23	8.2	12	5	7	-13	-23
19	11.8	26	8.2	13	7	-8	-15	-25
20	12.6	21	8.7	13	5	6	12	21
21	13.5	16	9.7	13	5	6	12	21
22	11.9	-23	9.2	-11	-6	-9	16	27
23	11.0	-28	8.5	-11	-8	-13	-23	36
24	10.4	-26	8.0	-8	-8	-13	-25	-39

Tx : VK SOUTH Rx : Asia

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	22.5	1.	18.0	7	13	12	8	0
2	23 1	1.	18.8	5	12	12	8	2
3	23.4	11	19.4	5	12	12	9	3
4	23.5	11	19.4	5	13	13	9	3
5	23.4	11	19.2	7	13	13	9	3
6	23.2	12	19.0	10	15	14	10	3
7	22.8	13	18.6	14	17	15	10	2
8	22 1	15	17 9	20	20	17	10	1
9	20.9	20	17.0	32	26	19	9	-2
10	19.6	22	15.8	34	26	17	5	-9
11	18 2	23	14.6	34	23	12	2	18
12	16.8	24	13.4	32	19	7	-10	-28
13	16.0	24	12.7	31	16	3	-16	-36
14	15.3	25	12..	29	13	-1	22	..
15	14.7	25	11.6	27	10	-6	-28	
16	14.0	25	11.0	25	6	11	-34	
17	13.4	26	10.4	22	2	-16	..	
18	2.7	26	9.7	19	-3	23	..	
19	12.1	26	9.2	15	-8	30	..	
20	1 2	25	8.7	8	19	..	..	..
2	14.6	20	10.9	21	6	9	-30	..
22	17 9	15	13.6	19	15	7	-4	19
23	20.6	13	15 9	14	15	12	4	-5
24	22.0	12	17 3	10	14	13	7	0

Tx : VK SOUTH Rx : USA/Caribbean

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	25.0	7	18.8	7	5	8	7	4
2	22.6	9	17.2	0	9	9	6	0
3	20.4	10	15.5	7	12	10	4	-4
4	18.7	13	14.1	13	13	9	0	-10
5	17.6	16	13.3	19	15	8	-2	-14
6	16.9	19	12.6	23	16	8	-4	-19
7	16.1	23	12.2	27	17	6	-8	-25
8	15.4	25	11.6	28	16	4	-12	-31
9	14.7	26	11 1	28	14	1	-17	-37
10	13.2	28	10.1	25	8	-7	-29	..
11	11 2	30	8.6	17	-3	-23	..	..
12	10.8	30	8.3	15	-6	-27	..	..
13	13.7	28	10.3	26	10	-4	-24	..
14	15.2	26	11.7	29	17	5	-11	-29
15	14.6	20	11.2	21	12	1	-14	-32
16	13.8	12	10.5	12	6	-3	-17	-34
17	13.3	4	10.0	5	2	-5	-18	-33
18	14.0	0	10.4	0	1	-3	-13	-26
19	16.3	0	12.8	-5	1	0	-6	-15
20	19.8	2	14.9	-11	0	2	0	-5
21	22.9	4	17.5	-16	0	4	4	0
22	24.8	5	19.3	-18	-1	4	5	3
23	25.4	6	20.2	-17	0	5	6	4
24	25.9	7	20.7	-13	2	7	8	5

Tx : VK WEST Rx : Mediterranean

UTC	MUF	dBU	POT	14.2	18.1	21.2	24.9	28.5
1	10.5	10	8.1	5	-10	-28	..	..
2	9.9	-1	7.6	0	-13	-28	..	..
3	13.1	1	9.7	2	-1	-10	-24	..
4	19.3	6	14.9	0	6	4	-1	-10
5	24.9	7	18.7	-5	6	8	7	2
6	25.2	7	19.9	-8	5	8	8	4
7	25.2	7	20.6	-10	4	7	7	4
8	25.1	7	20.5	-9	4	8	7	4
9	24.6	7	20.1	-7	5	8	7	3
10	23.8	8	19.4	-2	8	9	7	2
11	22.7	10	18.8	4	11	11	7	1
12	21.3	13	17.2	14	16	13	7	-1
13	19.8	17	15.9	24	20	15	3	-5
14	18.5	22	14.7	31	23	14	2	-11
15	17.7	24	14.1	32	22	13	0	-16
16	17.0	25	13.5	32	21	10	-4	-20
17	16.3	26	13.2	32	20	8	-7	-25
18	15.5	26	12.1	31	17	5	-12	-31
19	14.8	27	11.5	29	14	1	-17	-38
20	13.9	27	10.7	26	10	-4	-25	..
21	13.1	28	10.0	24	6	-10	-32	..
22	13.4	28	10.2	25	8	-7	-29	..
23	14.0	26	10.8	23	10	-3	23	..
24	12 9	20	9.8	16	2	-12	34	

Tx : VK SOUTH Rx : Europe L/P

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	10.6	-8	8.1	0	-4	13	28	..
2	10.6	3	8 2	2	5	15	32	..
3	10.6	.	8.2	3	5	17	36	..
4	10.1	5	7 9	4	8	23	..	..
5	9.4	8	7.3	2	14	31	..	..
6	9.5	14	7.4	4	15	-34		..
7	.10	22	8.7	.2	5	23	..	..
8	13 9	22	1. 1	2.	9	-4	22	..
9	17 3	21	2.8	27	18	9	3	-17
10	14..	18	10.9	18	10	0	-15	-32
.1	12.6	1.	9 7	10	3	-6	22	
12	14.6	7	10.	6	5	0	-11	24
13	3.8	1	9.8	0	.	3	12	24
4	.3.2	-8	9 2	5	.	-4	12	23
.5	.2.6	14	8.8	7	-2	-5	-12	-23
16	12.2	-18	8.5	-8	-2	-5	-12	-22
17	12.0	-20	8.5	-8	-2	-4	-11	-22
18	12.8	7	9 1	10	3	-4	-10	19
19	14.6	12	10.1	14	3	3	7	15
20	16.2	9	12.3	15	-4	-2	-6	13
21	14 1	11	11.0	10	-2	3	-9	-18
22	2.4	13	9 6	-6	-2	5	14	25
23	.1 4	13	8.8	3	2	-8	-18	32
24	10.8	12	8.3	-	3	10	-23	39

Tx : VK WEST Rx : Africa

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	13.3	18	10.0	17	6	-5	-[illegible]	..
2	14.4	15	11 0	15	9	0	-13	-29
3	17.0	12	13.4	12	11	6	-3	-15
4	21.4	11	16.4	8	13	11	1	-1
5	23.4	9	17 3	3	11	11	1	1
6	23.4	8	19.2	0	9	10	1	1
7	23.3	8	19.1	-1	8	9	1	0
8	23.2	8	18.9	1	8	9	6	0
9	22 9	8	18.6	0	9	9	1	0
10	22.2	9	18.0	3	10	9	5	-1
11	21.2	10	17.4	7	12	10	4	-3
12	19.8	12	15.9	12	13	10	2	-7
13	18.2	15	14.6	18	15	9	1	-13
14	16.7	19	13.3	22	16	7	-6	-21
15	15.7	23	12.5	26	16	5	-10	28
16	14.9	25	11.8	27	15	2	-15	34
17	14.2	27	11.5	27	13	-1	-20	..
18	13.6	28	10.6	26	11	-4	-24	..
19	13.1	30	10.1	25	8	-7	-29	..
20	12.5	30	9.5	23	5	-11	-34	..
21	12.2	30	9.2	22	4	-13	-38	..
22	12.8	30	9.6	25	7	9	31	..
23	13.3	28	10.2	25	10	5	-25	..
24	12.7	23	9.7	19	6	-8	-28	..

Tx : VK WEST Rx : Sth Pacific

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	24.6	12	19.6	10	16	15	11	5
2	25.1	12	20.3	10	16	16	12	6
3	25.3	12	18.7	10	17	16	12	6
4	25.3	12	20.8	12	18	17	13	7
5	25 1	13	20.6	13	19	18	13	7
6	25.0	13	20.4	20	22	20	15	7
7	24.6	16	20.0	27	26	22	16	8
8	23 7	19	19.1	34	30	24	16	7
9	22.1	22	17.8	38	31	24	14	5
10	20.4	24	16.4	38	30	22	10	-2
11	18.8	26	15.0	38	28	18	5	-9
12	17 9	27	14.2	37	26	15	1	-14
13	16.9	27	13.4	36	24	12	-3	-20
14	16.1	28	12.7	34	21	9	-7	-25
15	15 4	29	12.2	33	19	6	-11	-31
16	14.8	30	11.5	31	17	3	-15	-35
17	14.1	30	10.8	30	15	0	-19	..
18	13.5	30	10.2	28	12	-3	-24	..
19	13.0	25	9.9	22	8	-6	-27	..
20	13 7	20	10.3	19	9	-3	-21	..
21	16.0	16	12.6	17	12	4	-8	-23
22	19.3	14	14.6	15	15	11	2	-8
23	22.3	13	17.1	13	16	14	8	0
24	24.0	12	18.7	11	16	15	11	4

Tx : VK SOUTH Rx : Mediterranean

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11 5	2	8.8	4	3	11	-31	..
2	10.8	7	8 3	0	5	11	-31	..
3	14.4		10 7	2	0	-3	13	25
4	21 4	5	16.5	8	3	5	2	3
5	25.4	6	20.8	15	1	8	7	4
6	25.2	6	20.6	17	0	5	6	3
7	25 1	6	20.5	17	0	5	6	3
8	24 7	6	20 1	-15	1	5	6	3
9	24.0	7	19.5	-10	3	7	6	3
10	22 8	8	18.5	3	7	9	7	2
11	21 3	11	17 1	6	12	11	6	0
12	19 7	.4	15.7	15	16	12	4	5
13	18..	19	14.4	23	18	12	1	11
14	17.0	23	13.5	30	2.	11	2	-17
15	16.2	25	12.8	30	19	8	-6	-23
16	15.4	26	12 1	30	17	5	-11	-29
17	.4.8	27	.1 5	29	16	8	15	35
18	.4.2	28	10.9	28	13	0	19	
.9	13 5	28	10.3	26	10	-4	25	..
20	13	29	9 9	25	8	-7	-28	
21	13.9	27	10.4	26	1.	2	22	
22	6.1	23	11 9	28	18	7	7	23
23	16.0	20	12.3	23	15	7	-6	21
24	.4.3	14	10.8	14	7	2	-17	34

Tx : VK WEST Rx : Asia

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	26.1	14	20.8	15	20	20	16	10
2	26.6	14	21.4	12	19	19	16	11
3	27 5	13	21.0	11	18	19	16	11
4	27.9	13	21.2	10	18	19	17	12
5	28.4	13	21.6	11	19	20	18	13
6	29.3	14	22.3	13	21	21	19	15
7	29.5	15	23.3	17	23	23	21	17
8	28.9	16	23.6	22	26	25	22	17
9	27 8	18	22.6	29	30	27	23	16
10	26.4	21	22.0	41	37	31	24	16
11	25.1	22	20.2	43	36	30	22	13
12	23.5	22	18.9	43	35	28	18	8
13	22.2	23	17.7	42	33	25	15	3
14	21.5	23	17 1	42	32	24	12	0
15	20.8	23	16.5	41	31	22	10	3
16	20.0	23	16.2	39	29	19	6	-8
17	18.8	24	14.7	37	26	15	1	-15
18	17 7	24	13.8	35	23	11	-5	-23
19	16.4	25	12.6	32	18	4	-14	-35
20	14.0	25	10.8	24	4	-14	-39	..
21	12.6	25	9.8	17	-6	-28	..	..
22	16.3	22	12.7	29	15	2	-16	-37
23	21 7	16	16.7	24	22	17	9	-1
24	25.0	15	19.6	19	22	20	15	8

Tx : VK WEST Rx : USA/Caribbean

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	23.2	6	17 5	-14	1	5	5	2
2	20.8	6	15.7	-8	4	6	3	-1
3	18.5	6	13.9	-2	5	5	1	-7
4	16.6	7	12 5	4	7	4	-3	-13
5	15.5	10	11.6	8	8	3	-6	-19
6	14.8	13	11.0	13	9	2	-10	-24
7	14.2	17	10.8	17	10	1	-13	-30
8	13.9	22	10.4	21	11	0	-17	36
9	13.6	27	10.2	25	12	1	-20	.
10	12.5	29	9.5	24	7	-8	-30	..
11	10.9	32	8.4	19	-1	-21	..	..
12	10.7	33	8.3	18	-3	-23		
13	13.3	31	9 9	28	12	-2	23	
14	16.5	29	13.0	35	24	13	0	16
15	14.3	25	11.0	25	15	4	-11	-29
16	13.7	18	10.5	18	10	1	-14	-31
17	14.6	12	11.3	12	9	3	-9	-23
18	13.9	5	10.6	6	5	0	-11	-24
19	13.3	-2	10.1	0	2	-2	-11	-24
20	14.0	5	10.5	-4	1	1	8	-19
21	16.3	-2	12.9	9	0	.	-3	-10
22	19 9	1	15.1	-16	1	2	2	-2
23	22.9	4	17.6	20	2	3	4	2
24	24.6	6	19.2	19	-1	5	6	4

Club Corner

Barossa Amateur Radio Club Inc

Mt Pleasant Radio Picnic day

The 4th Annual Mt Pleasant Radio Picnic day will be held on Sunday 28th March 1993, from 1000 hours to 1600 hours at the Talunga Park Showgrounds, Mt Pleasant

A major day with activities to suit everybody is planned, and include transformer throwing competitions, Interclub tug of Wars, raffles with good prizes being donated by the sponsors.

Displays from Dick Smith Electronics, Castrol, Countrywide Mobile Communications, Johnston Electronic & Visual Services, Scout Communications, Lencom Antennas, Codan Pty Ltd, Microwave Developments, WIA Equipment Supplies, Stewart Electronic Components, Royal Flying Doctor Service, OTC Maritime, St John's Ambulance, SA State Emergency Service, SA Country Fire Services, Australian Volunteer Coastguard, ACRM, and WICEN promise to make the Radio Picnic Day one to remember.

Undercover trestle table space is available for display and sales use by individuals and clubs for $5-00 per table. Charity organisations can set up displays free of charge.

On-site catering from The Barbecue Man and Noddy's Soft Whip will available throughout the event.

Further information and table bookings may be obtained from Steve Johnston VK5ZNJ on (08) 287 1061, FAX (08) 287 0422, or the Club Secretary, Steve Bigg VK5BCD on (085) 23 0628 (most evenings).

Steve Johnston VK5ZNJ
President BARC

Coral Coast Amateur Radio Group

Oldest Radio Amateur

One of the group's members is Harry Angel VK4HA, who celebrated his 101st birthday on 14th December 1992. It is believed that Harry is the oldest amateur radio operator in the world, and certainly the oldest WIA member.

Harry suffered a slight misfortune recently, he has had a fall and broke a hip. He is recuperating in Greenslopes Hospital in Brisbane. We all wish Harry a speedy recovery.

The members of the Coral Coast Amateur Radio Group recently celebrated their 25th anniversary, and are still one of the most active groups on the amateur bands. The call signs of the current group are:

VK2
JAIB, AEK, AVO, AVU, AXZ, ETF, FJW, LS, LT, STD.

VK4
AAU, ABD, AGZ, ALC, BET, BHS, BQ, CBP, EF, FUQ, GM, IW, LZ, MU, NN, PO, PZ, RU, SKL, WAM, WB, WK, WKZ, WY, YD, ZB, ZU.

Of the original eight members of the group, only two remain, they are Les VK4LZ and Charlie VK4BQ. The picture shows Les Bell VK4LZ in his shack. Les will be 89 years of age on 28th January 1993.

L E Daniels VK2AXZ

South Coast Amateur Radio Club Inc

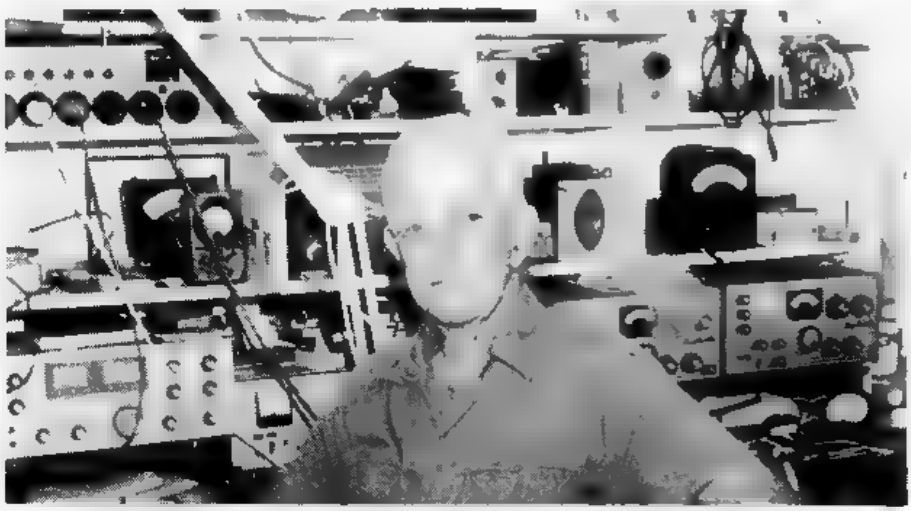
The South Coast Amateur Radio Club Inc, based in the southern suburbs of Adelaide, has recently installed a number of new facilities.

The old RTTY repeater VK5RSV which used to be located on O'Halloran Hill has had a facelift, rebuild and relocation to a new site on Willunga Hill. The new site is almost twice as high and, while it is further south of the city than before, it is giving excellent coverage throughout the southern suburbs and Murray Lakes regions. VK5RSV, now licensed as a multimode repeater, is configured as a voice repeater. Allowed modes on the repeater are RTTY, SSTV, FAX, Packet, ASCII as well as Voice. VK5RSV operates on 146.675MHz output and 146.075MHz input Thanks must go to Bernie VK5ABS for the work he put in rebuilding the repeater.

Also recently recommissioned is the club's Packet/RTTY BBS station VK5TTY on O'Halloran Hill. The Packet and RTTY BBS facilities have spent the past 13 months undergoing a complete overhaul. The Packet 2m frequency is 144.900MHz as before, but the RTTY BBS frequency has changed from being on the VK5RSV repeater frequency to now operating on 147.525MHz simplex. Packet linking to the other BBS systems in Adelaide is in operation via 439.050MHz. This BBS provides a wide range of services including a special BAYCOM program transfer facility, TCPIP networking services and a RTTY to Packet mail gateway. Thanks go to Peter VK5TZX, John VK5KJJ, Darin VK5XDR and all the other people involved in the VK5TTY project for the time and effort put in to get the system back on air.

If you would like to know more about the VK5TTY BBS system send a packet message to VK5ARC@VK5TTY.#ADL.#SA.AUS.OC or by post to the South Coast Amateur Radio Club Inc, PO Box 333, Morphett Vale SA 5161. Finally, by now the VI5VIA special event station commemorating the closure of the Adelaide Coastal Radio Station VIA will have completed its operations. VI5VIA was manned by SCARC members and was heard over the weekend of 29 January to 1 February. The results of this event will hopefully be published next issue. If anyone wishes to contact the South Coast Amateur Radio Club Inc they can either write to the secretary at PO Box 333, Morphett Vale, SA 5161, or come to one of the club meetings. There is a formal meeting once a month on the third Wednesday at 8pm, in the clubrooms at 12 Baden Terrace, O'Sullivans Beach. Informal meetings are held on the other Wednesdays. Foxhunts are also run by the club. Contact us for times and starting locations. The club liaison frequencies on 2m are 147.675MHz Simplex, 146.675MHz repeater VK5RSV and on 70cm 439.675MHz Simplex.

Grant Willis VK5ZWI
Publicity Officer
South Coast ARC Inc



Les Bell VK4LZ, one of the original members of the Coral Coast Amateur Radio Group.

Awards

John Kelleher VK3DP Federal Awards Manager

DXCC Profiles No. 6
Robin Lyon VK6LK

Robin began as an SWL from 1946. He was first licensed in 1951 with the callsign ST2GL, as a member of the Sudan Defence Force.

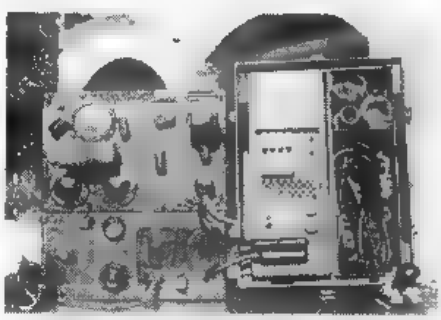
On 20 April 1954, using a B2 suitcase "spy set", he worked G3HDA on 15m. (You may recall from previous DXCC profiles, that G3HDA is now VK6HD). From 1954 to 1956, Robin operated as DL2XR, and during 1958-59 was active from Aden as VS9AH. He moved to Australia in 1970, and was licensed as VK6LK.

His equipment ranged from an FT200 to 1981. Through a TS830S, a Drake C Line (TX4C) and a much modified R4C, in his opinion an outstanding receiver. His present FT-1000 is a luxury, with more features than he can use all at once. His first HF antenna was a TH3 Junior, which was later replaced by a TH6. He had wire antennas for the lower HF bands. He now has a sophisticated array of antennas for all HF bands.

His aim is to work all DXCC countries on 80m. At present, he has 241 confirmed countries on his band.

His advice begins with a cardinal rule — listen, listen and keep on listening. A good DX operator needs patience, perseverance and good operating procedures and manners. His advice also confirms that a properly designed antenna system, and a receiver with a good dynamic range and selectivity, tend to make the job much easier. He also emphasises that a good source of reliable information is essential. Work together with your DX friends, swap and compare information.

NB: In his resume, Robin noted that some operators carry out prolonged QSOs on or near the prescribed DX calling frequencies of 3.795, 7.075, 14.195, 21 295 etc. The one you want could be calling, without success. I join with Robin in condemning the actions of these selfish few



Type 3 Mark II World War II suitcase transceiver (B2). Output 15 watts CW.

Slovenia (S5, formerly YU3), Croatia (9A, formerly YU2) and Bosnia-Herzegovina (4NA-YU4)

These countries have been added to the DXCC Countries List, following the unanimous voting by the ARRL Awards Committee. The details are contained in the committee's releases dated 25th and 30th November 1992.

Croatia and Slovenia are added for contacts made 26 June 1991 and after. Bosnia-Herzegovina is added for contacts made 15 October 1991 and after. The DXCC desk will now accept cards received at ARRL HQ for updates to ARRL DXCC. For any further information, contact Bill Kennemer K5FUV at ARRL headquarters.

In the past few years there have been several changes to the DXCC countries listings. After the amalgamation of North and South Yemen, 4W was deleted and 7O was installed. Then, with the unification of West and East Germany, the series Y2 to Y9 was deleted. Later, Walvis Bay (ZS9) and Penguin Island (ZS1) were added, making the total 324 countries. With the addition of the above, this total becomes 327 DXCC countries. The deletion of Abu Ail is being considered, after action to de-commission this Red Sea lighthouse. My spies inform me that the wind of change may yet extend to Czechoslovakia — what next!!

The capital cities and geographical coordinates for the new countries are:

S5 — Ljubljana — 46 deg 04 min N, 14 deg 33 min E
9A — Zagreb — 45 deg 50 min N, 16 deg 00 min E
4N4 — Sarajevo — 43 deg 52 min N, 18 deg 26 min E

For those with beam heading programs, please update accordingly.

Looking at the map, the shaded area shows the new DXCC countries. The southernmost portion, YU5/4N5, Macedonia, has not yet been accepted as a separate country

Robin Lyon VK6LK ar

Pounding Brass

Gilbert Griffith VK3CQ 7 Church Street Bright Vic 3741

This month I wish to repeat some material which appeared in 1988 as there are quite a few newcomers to the ranks of Morsiacs and a number of letters have been arriving lately asking for answers, where the writers concerned did not have access to back-issues of Amateur Radio.

Much of what follows will never be required by the average Amateur and in any case these days in commercial rigs there is usually no method of adjusting many of the parameters we will be discussing.

What we call CW is the most basic form of radio communication. The text books tell us that it is really ICW, interrupted carrier wave. We can split hairs and call it just about anything, after all we are not really interrupting a carrier but sending bits of carrier each time we depress the key.

Modulated carrier wave is another way to send Morse code. The carrier is modulated at an audio frequency of about 800Hz and can be easily heard on an AM type of receiver which does not have a BFO (beat frequency oscillator). Another method is called Frequency Shift Keying where the dot or mark and the space are on different frequencies.

The bandwidth required by a properly keyed signal is quite small, and directly related to the speed of sending. A simple on-off switch will generate a square envelope, together with its harmonics or clicks. You may hear these clicks while tuning in the CW section of the bands and be able to pinpoint the station involved. On the other hand a "soft" dot may be hard to copy, especially at high speed.

There are two main components which affect keying characteristics. Envelope shape, and frequency stability. Any trouble such as key clicks, ripple, chirp, whoop and spacer waves can be attributed to poor conditions in one of these areas. The envelope shape is the outline of the pattern that the signal would display on an oscilloscope. You can imagine that getting the shape right is a difficult thing to do properly, let alone getting it right for a number of different speeds. An unduly "hard" signal will cause

key clicks, which are actually unwanted sidebands, taking up more spectrum space (and power from the intelligent part of the signal)

Chirp is a form of frequency instability which occurs each time the transmitter is keyed, and is recognised by a change in beat frequency at the beginning and end of each character when the signal is monitored on a receiver. It really does sound like a bird's chirp! About the only place you will hear it nowadays is on homebrew equipment controlled by a VFO, (not mine!), and here are three main causes.

1. DC Instability — which occurs when a common power supply is used for the oscillator and the power amplifier Even the best designed oscillator will require a regulated power supply,or sometimes a separate power supply, to have the stability needed for today's standards.
2. Pulling — refers to the effect on the oscillator frequency of one or more of the subsequent stages whose operating conditions change during the keying cycle. If the stage following the oscillator draws input current or the early stages are tightly coupled, pulling can be expected. If the oscillator is on the same frequency as the power amplifier the likelihood is increased. By careful design it should be possible to short the output of the oscillator chain without shifting the frequency by more than a few hertz. However this sort of dedication is not necessary in a receiver alone.
3. RF Feedback — any high level stray signals leaking back to the oscillator will have an appreciable effect on its frequency, especially if it is a VFO. Isolation of the oscillator is of paramount importance. External feedback is only discovered after the transmitter has been built, and the commonest cause is the power amplifier circuitry being close to the oscillator section. A metal screen is recommended as well as bypassing the HT line to RF by means of series resistance and shunt capacitance. In case you are wondering where I am reading up on all this, let me assure you that I am having ALL the above problems with my QRP gear, so a certain amount or "reading up" is mandatory. I am merely attempting to pass the information along.

All the problems are compounded when attempting a full break-in system (QSK). Not only must the transmitted signal be clean but the receiver must be muted or attenuated in strict timing with the transmitted signal. Slow AGC circuits such as are fitted to most commercial rigs are characterised by their long recovery time, so the receiver will not be able to recover its sensitivity in the spaces between the signal elements. Even the design of the audio section must be carefully considered to prevent the thumps associated with its switching on and off at Morse speeds.

The feature of a full break-in system is that the operator is able to hear incoming signals in between his own dots and dashes. When using QSK the normal changeover and keying functions are controlled by the key, and they must take place in the right sequence. The station must return to the receiving condition at the sensitivity level required by the operator between each dot and dash of the transmitted message. It is not easy to install a good break-in system, one of the problems being that of keying the transmitter oscillator stage. This can be avoided by leaving the oscillator running and screening it so well that it cannot be heard in the station receiver, or using a mixer type VFO with a keyed mixer. It is very difficult to screen the VFO from the station receiver.

If the transmitter oscillator runs continuously it may be audible as a backwave or spacer wave between the keying pulses. A strong backwave may indicate the need for neutralising one or more transmitter stages.

RF envelope shaping can be controlled in different parts of the transmitter by many different keying methods. Because on-off keying is a form of amplitude modulation it generates sidebands whose spacing from the carrier is a function of the keying envelope rise and fall times, which are the highest frequency components of the keying waveform. An untreated keyed waveform looks like square wave modulation, so it consists of the carrier plus all its odd harmonics. The resultant key clicks will extend many kHz either side of the carrier. On the other hand an envelope with a long rise and fall time will sound soft because there is less contrast between the noise and the signal for the ear to respond well at high speeds.

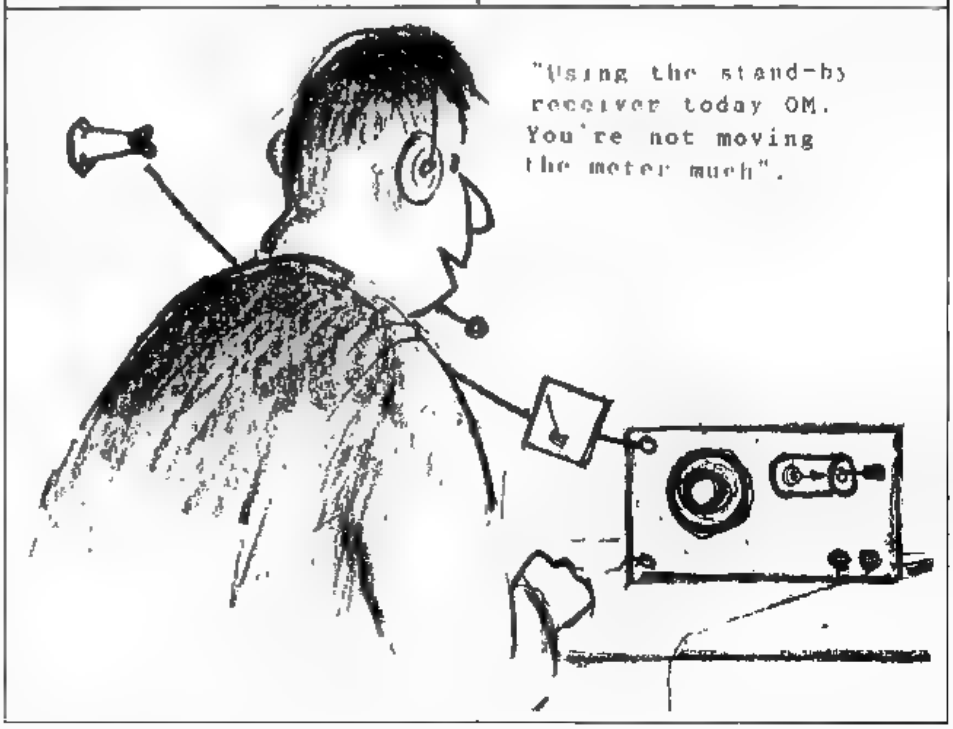
Weighting provides a method of adjusting the overall shape of a string of Morse elements. It can be used to adjust individual element shapes but this is best done in the actual keying circuits of the transmitter. Slow Morse (5-15wpm) can benefit from a heavier weight, ie. the length of the dots and dashes is increased with respect to the spaces between them. This, according to many operators, gives the signal more punch. At higher speeds (25wpm-??) a light weight will give the dots more emphasis, but the conditions must be relatively good for any copying at high speeds. It requires a well based knowledge of keying envelopes just to know which knobs to twiddle if you have the latest in weight controlling keyers! Otherwise you can certainly end up with some interesting effects.

There are many possible methods of keying, and the choice is largely one of practical convenience, personal preference, and suitability to the station as a whole. Almost any stage of the transmitter may be keyed. If the oscillator is keyed, the requirements of a short time constant to reduce chirp and a long time constant to eliminate clicks conflict.

If any stage before the pa is keyed with softening, the pa may harden the keying causing clicks. So keying the pa seems to be preferable. In some cases it is useful to key more than one stage sequentially.

References

RSGB "Radio Communications Handbook" Fifth Edition.
ARRL "The ARRL Handbook" 1986 Edition.



Education Notes

Brenda M Edmonds VK3KT PO Box 445 Blackburn VIC 3130

Book Review
NZART Basic Radio Training Manual

As noted in WIANEWS last month, a new edition of the NZART Basic Radio Training Manual has just been released, after having been out of print for some years. NZART is to be congratulated on the revision which has restored a valuable resource to the amateur education scene.

As with earlier editions, the content is set between the standards of the Australian Novice and AOCP examinations. The language and style are equivalent to an average senior secondary school text book. It is perhaps more suited to use as a class text, where the instructor can elaborate or simplify if needed, than as the sole text for a complete beginner. However, a beginner with some background in physics, or even with a friendly amateur to offer assistance, could use this as the main text book.

The new version is very professionally presented, a tribute to the improvements in publishing technology over the last few years. It is of A4 size, with a glossy four-colour cover and binding which should withstand the wear fairly well. The print is clean and of adequate size, even for aging eyes, and the computer drawn diagrams are clear and well labelled.

Of the 25 chapters (130 pages), 16 (90 pages) relate to a syllabus which is very little different from the Australian Novice syllabus, although, strangely, there is no chapter on Interference or on Safety. Information about the examinations, sample questions and a short glossary of terms are separate topics, as are hints on learning Morse code, operating a station and basic calculations.

Information on New Zealand Licence conditions and the roles of the ITU and IARU are also included. The Index is comprehensive, although for many terms only the first reference is noted.

Each chapter begins with a short summary of content and list of Key Words, and ends with a few multichoice revision questions. Terms which are included in the Glossary are underlined the first time they appear in the text

The text tends to assume prior knowledge in some areas, and also fails to follow-up at times, as in the section on CW transmitters, which states that "The keyed waveform from the transmitter must be shaped to avoid key clicks" but neither defines "key clicks" nor describes key click filters. I was surprised to find that all diagrams show conventional current flow rather than electron flow, and all discussion of HF propagation refers to reflection by the ionosphere rather than refraction.

It is difficult to pick out specific good points when the high standard is consistent. I liked the clear layout of worked problems and examples throughout. The chapter on VHF, UHF and Microwaves I found very well done, as were those on Antennas and Measurement. Frequency modulation is dealt with briefly but adequately. The chapters on Semiconductors and Oscillators reflect the increasing role of solid state circuitry in modern equipment.

It was not until I dredged up the previous edition and compared them, that I realised why the new version seemed to be at a higher level and also less "user-friendly". The earlier edition text was in two-column pages, with the diagrams either one or two columns wide, whereas the new, in three-column format, has most diagrams only one column wide, giving less prominence, in proportion, to the diagrams and more to the text. Also, the new edition has not continued the practice of printing all new terms in bold, which is a distinct advantage when one is seeking a definition or explanation. A further omission is the snippets of history relating the pioneers of electricity to the units named after them.

In all, I have no hesitation in recommending this book for classes for both Novice and AOCP level. I am sure that NZART can look forward to significant sales in Australia. At $A13.00, it compares more than favourably with other current texts and is a welcome addition to the resources available here.

Enquiries regarding purchases may be directed to NZART, PO Box 40 525, Upper Hutt, New Zealand.

The WIA thanks NZART for the review copy.

BT

Technical Correspondence

Warning from AUSTEL

My attention has been drawn to an article "Technical Abstracts: The Iron Glove" which appeared in the November 1992 issue of your magazine.

The article referred to techniques for shielding to reduce telephone RFI. I am disappointed to have to say that I consider the article irresponsible because it is dangerous technical advice and is an encouragement to your readers to be in breach of the Telecommunications Act 1991.

Telephones, as with any equipment connecting to a telecommunications network, must meet AUSTEL's technical standards. A prime objective of this technical regulation is to ensure the equipment is safe for the user. The placing of a "rubber glove filled with steel wool as shielding in a phone" within the enclosure of a telephone outlines a potentially dangerous practice.

In particular the user would face possible lethal consequences if voltage surges including lightning were introduced through the telecommunications lines.

Implementation of your advice would also open your readers to a liability for a penalty of $12,000 under the legislation. Modification of permitted customer equipment such as the TF 200 phone would void the permit status of the phone. Furthermore your reference to RFI suppressed phones and other equipment in the USA was not in the context that connection of such equipment without an AUSTEL permit, denoting that it meets AUSTEL's technical standards, is also illegal with liability for a $12,000 penalty.

Norm O'Doherty
A/g Executive General Manager
Technical Division
Australian Telecommunications Authority
5 Queens Road
Melbourne VIC
(PO Box 7443
St Kilda Road VIC 3004)

Approval for Towers

The Australian Tower Code AS 3995 is due for release early in 1993.

Consequently it is becoming increasingly difficult to get permission to install a tower. This is more so for second hand towers.

If you intend to buy a second hand tower this is what you should do before making a purchase.

First, notify the intended council to find their attitude regarding design acceptance. Some towers were designed to earlier codes, even pre-dating metric units.

Check council's acceptance.

Obtain council inspection prior to dismantle and removal from original site.

The reason for doing all this is that some councils are no longer accepting the old computations.

If this is the case you will have to acquire the services of an engineer to re-work the computations (a very expensive exercise).

Doug Rowe VK3KMN
Nally Radio Towers
46-48 Elliott Road
Dandenong Vic 3175

HAMADS

TRADE ADS

● AMIDON FERROMAGNETIC CORES. For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please 14 Boanyo Ave Kiama) Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Albury; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne.

● WEATHER FAX programs for IBM XT/ATs *** "RADFAX2" $35-00, is a high resolution shortwave weatherfax, morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder *** "SATFAX" $45-00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. *** "MAXISAT" $75-00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add $3-00 postage. ONLY from M Delahuntly, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.

FOR SALE ACT

● KENWOOD TS120V S/N 921679, Linear Amp TL120 S/N 40457, CW filter, mic, cables $600; ROTATOR CDE IV $300; TH3JNR $200; Owen VK1CC QTHR (06) 254 2009

● FRG8800 Comms rx as new $860 ONO S/N 9E330080, CEdata 1200 bd Hayes compat modems with built-in PSU, new $115 ea; Markus, VK1SK QTHR (06) 231 3373.

FOR SALE NSW

● NALLY 13.7m tilt/over tower in GC, purchaser to dismantle and remove, HY-GAIN 203BA mono band 20m antenna, HAM 2CD44 rotator and control, $1100, Deceased Estate, enquiries to Rolly VK2GFO QTHR (044) 74 3361

● DECEASED ESTATE — KENWOOD TS830S S/N 1041997, MC50 desk mic plus hand mic, SP180 ext spkr, 3213.

● COLLINS KWM2A HF txcvr $1,100; COLLINS 30L-1 Linear $900; YAESU FT707 no mobile use, $600; all exc cond, manuals and mics. WIRELESS SET No. 62 MKII HF txcvr $350, VGC; AMPLIFIER RF No 2 MK3 $200; VK2OC (069) 48 5267 after 8.00 pm only

● 1 only COLLINS mechanical filter, type F455Q7; 1 only COLLINS mechanical filter type F455A-3, offers to Art VK2AS, QTHR (02) 416 7784

● KENWOOD TS520S xcvr S/N 840611, DG-5 DIGITAL display S/N 730574, MC-35S h/mic, operator and service manuals, original packing, all good cond, $575 ONO; Don VK2MJX QTHR (043) 28 1040.

● YAESU FT301 xcvr S/N 7L171566 with mic and man $450 ONO; GEN COVERAGE Rx DX200, 150 kHz to 30 MHz with digital readout, $150; VK2AIV QTHR (042) 34 1431.

● ROTATOR HAM4, 2 el Q.Quad 10/15/20m, DELTA loop 80/40m, EC; Mark, PO Box 1609, Hornsby NSW 2077

FOR SALE VIC

● ANTENNAS — HUSTLER 5BTV HF trap vertical, near new; RACK 80/40/20 trap dipole, good cond; TANDY 27 MHz Base stn, unused, any reasonable offer accepted; John VK3BCQ, QTHR, (03) 309 5613.

● ICOM IC751, exec cond with AC PSU, fan VK3AQU (057) 52 2631

● KENWOOD TS-430S with AM/CW filters, PS50, SP430, mint cond, $1500; VALVES 2 x 6146Bs, 1 x 12BY7A, Philips, new $100, TINY2 TNC $200, plus RS232 5m cable; MC/50 $85, HI-MOUND HK-702 marble base Morse key $100, manuals, boxes supplied; VK3EPD (059) 83 1771

● YAESU FL2050 2m linear amp, S/N 11030043, $120 ONO; VHF txcvr ex govt use $50; DICK SMITH UHF 80 ch txcvr, $120 ONO; JIL SX200 scanning monitor rx, $120 ONO; Jim VK3DPO (03) 857 5342

● ANTENNA TUNER MFJ949D with inbuilt 300w dummy load, new in box, $250 ONO; Damien VK3CDI (054) 27 3121 A Hrs.

● KENWOOD 500 Hz CW filters, suit 850, 930, 940, 950 etc YK88C-1 $50, YG455-1 $120; ICOM SM-6 desk mic $60; HM-12 hand mic $30; Ron VK3OM QTHR (059) 44 3019.

● MULTI BAND inverted vee dipole ant system, four dipoles on single co-ax covering 3.5, 7, 10, 14, 21, 28 MHz with pretuned switchable ATU, complete with 8m telescopic tubular mast, all guys, approx 18m 213 co-ax, easily erected for base or portable op, $250; Lay VK3CF, QTHR (03) 589 4726.

● YAESU FT747GX Ser No 9M250613 gc, $895, FP757HD PSU gc S/N 4I060952, $295; Gordon VK3VFK (050) 21 1452

● HALLICRAFTERS rx mod S38A, 1.6 — 30 MHz in 4 bands, sep bandspread dial, 5 valves, 110 volt, $250; HEATH HW32 20m xcvr, 200w, single knob tune up, VOX, with AC PSU, good performer, $200; AERIAL TUNER, rotary inductor, tune and load capacitors, co-ax sockets and sep terminals, $200; QRP TRANSMATCH aerial tuner, tapped coil, tune & load caps, $100; ROTARY INDUCTOR, ceramic, strong frame, rotor 3" diam, 6" long, 27 spaced turns of eighth ins, plated copper, $100; ROTARY INDUCTOR with counter, rotor 2.25" diam, 5" long, abt 100 turns of silver wire, $100; TRANSMITTER CAPACITOR 35 to 497pF, CLYDON, good spacing, $60; BENDIX PSU mod MP28B, lge dynamotor, two 807s, modulator or voltage reg?, aircraft type $40; RESISTANCE bridge type 551, "Transmission Products" metered, now an antique, $50; VK3DS (053) 32 3226 QTHR

FOR SALE QLD

● SELL/SWAP HOMEBREW CMOS electronic CW keyer, built-in PS with Galbraith paddle, exc cond, $120, or swap for GDO same cond, Trevor VK4ARB QTHR (07) 269 8848.

● YAESU FT200 xcvr, FP200 PSU, spkr, mic, man, spare finals, valves, relays, ex cond, LICENCED AMATEURS ONLY; Kev VK4SA (075) 94 7369.

● AWA low distortion audio osc, type IA57321 20 Hz to 20 kHz, handbook, $30; Bill VK4WO QTHR.

FOR SALE SA

● KENWOOD station monitor SM220, hardly used, reas offer; MIDLAND CB 27 MHz, Tx/Rx with extras, mag spkr, coax, ant etc, make reas offer, H C Harmer VK5AUS QTHR (08) 344 5011

FOR SALE WA

● COLLINS linear amp 30-L1 round emblem S/N 41578, incl inst man, 4 extra 811As matched pairs, spare tubes plus auto transformer 250V/230V 4KW rating, package price $1200 ONO; COLLINS S-Line Rx 75-S3B round emblem, instr man, 312-B3 matching spkr, complete set spare tubes, package price $375 ONO, VK6RU QTHR (09) 385 9664

● ICOM IC551 6m base rig, 10w, SSB/CW, 12v op, memories, $350; ICOM ICAT100 auto tuner $280; Graham VK6RO (09) 451 3561, QTHR

WANTED ACT

● GDO DM81 or similar. Willing to pay reasonable price; VK1NGD (06) 292 2609.

WANTED NSW

● AVO valve characteristic meter MKIV, early to mid 1960s vintage, Geoff VK2AZT (069) 42 1392 any time

WANTED VIC

● PRC25 Military TX/RX, pref good cond, Damien VK3CDI (054) 27 3121 A Hrs.

● INFORMATION on Oscilloscope Model 539 by KIKUSUI Co Japan Dist in Aust by Jacoby Mitchell, DATA for RAM I/O Chip Nat No 1NS8154N, KENWOOD ATU Model AT130, Bruce VK3YBW QTHR (03) 527 2661 after 6pm

● FP757 or similar 12v PSU for FT747, ANTENNA NOISE BRIDGE with reactance scale; 2m H/T "Fancy Facilities Not Essential"; Dr Kevin Johnston, Dept of Anaesthesia, Austin Hospital Heidelberg Vic 3084

● CIRCUIT DIAG of auto focus board Leitz Pradovit R/RA slide projector; VK3HG Trevor Starritt, RMB 2340, Tatura Vic 3616 (058) 29 0058.

WANTED QLD

● COLLINS R390 Rx, mains pwr input plug; Lionel VK4NS QTHR

● H E L P! I lost the circuit of EUROPA Transverter I am trying to repair for a fellow Ham, can anyone copy and send to John VK4TL, Box 508 Malanda QLD 4885, tel (070) 96 8328.

WANTED SA

● MANUAL or HANDBOOK for Wayne Kerr Universal Bridge type B221, borrow or buy, all costs met, Kurt VK5KI QTHR (08) 264 1902.

● YAESU FV-707DM Digital VFO; VK5BS (08) 295 3249.

WANTED WA

● PLAYMASTER valve stereo amp, swap for IC202 and FT2FB or cash. (09) 841 6192.

WANTED TAS

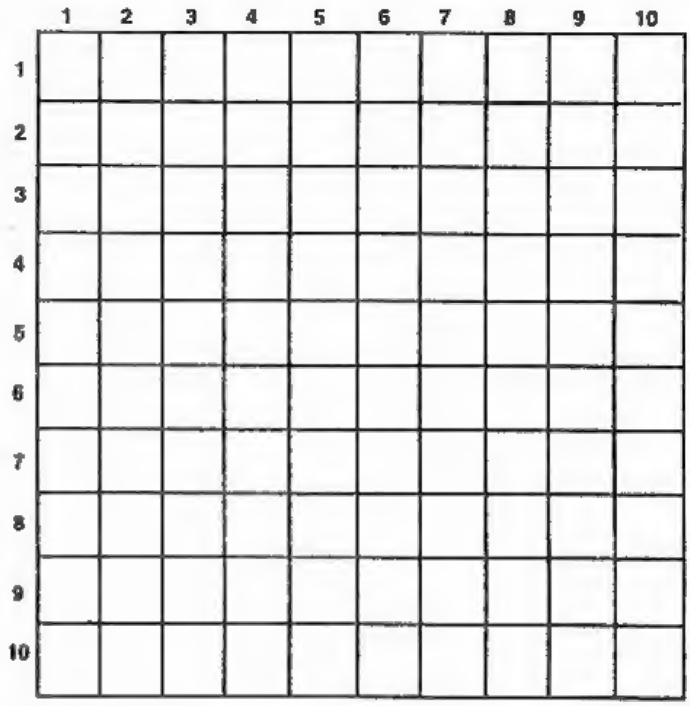
● QUAD HUBS, Planar or Spider, & F/Glass poles 4m long; Brian VK7TA QTHR (002) 34 5562.

MISCELLANEOUS

● PLEASE SEND your donation of QSL cards, old or new, to the Hon Curator of WIA QSL Collection, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350. Let us save something for the future.

ar

Morseword 71



Across:

1 Sketched
2 Caring
3 Warble
4 Huge
5 Insect
6 Green stone
7 Hard metal
8 Division
9 They go with dashes
10 Fright

Down:

1 Cheeky smile
2 Marine animal
3 Endure
4 Fence post
5 Funeral carriage
6 Achieve
7 Perspire
8 Small dessert?
9 Ukrainian city
10 Narrate

Solution Page 64

Hamads

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.
*Eight lines per issue free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclose a mailing label from this magazine with your Hamad.
*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.
*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.
*QTHR means address is correct as set out in the WIA current Call Book.

*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.
*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad has been received.
Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.
Conditions for commercial advertising are as follows: $25.00 for four lines, plus $2.25 per line (or part thereof) Minimum charge — $25.00 pre—payable.

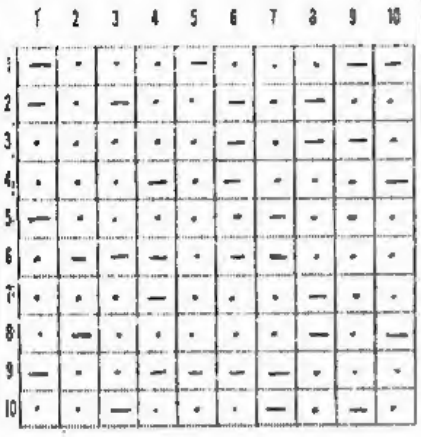
State: .....

Not for publication: ❑ Miscellaneous ❑ For Sale ❑ Wanted

Name:..... Call Sign: ..... Address: .....

Solution to Morseword No 71

page 63



Solution to Morseword No 71
Across: 1 drew; 2 kind; 3 sing; 4 vast; 5 bitie; 6 jade; 7 steel; 8 rift; 9 dots; 10 fear.
Down: 1 grin; 2 seal; 3 last; 4 stake; 5 bier; 6 attain; 7 sweat; 8 pud; 9 Kiev; 10 tell.

TYPESETTING AND PRINTING: Industrial Printing, 122 Dover Street, Richmond, 3121, Telephone: 428 2958

MAIL DISTRIBUTION: R L Polk & Co Pty Ltd, 98 Herbert St, Northcote, Vic. 3070, Tel: (03) 482 2255

ADVERTISERS INDEX

HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary
Wireless Institute of Australia
PO Box 300
Caulfield South, Vic 3162

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms:.....

.....

Call Sign (if applicable):.....

Address:.....

.....

.....

State and Postcode:.....

WIA Morse Practice Transmissions

VK2BWI Nightly at 2000 local on 3550 kHz

VK2RCW Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm

VK3COD Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz

VK3RCW Continuous on 144.975 MHz 5 wpm, 10 wpm

VK4WIT Monday at 0930 UTC on 3535 KHz

VK4WCH Wednesday at 1000 UTC on 3535 kHz

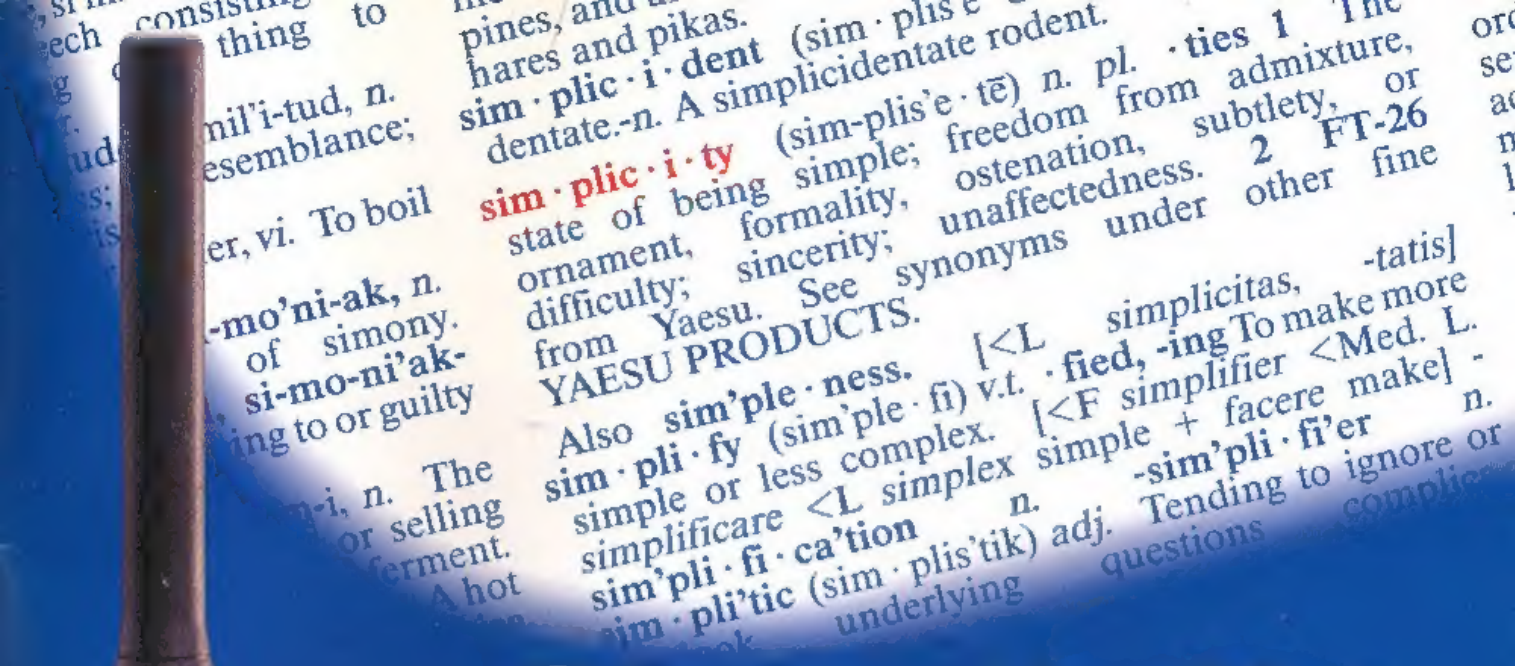
VK4AV Thursday at 0930 UTC on 3535 kHz

VK4WIS Sunday at 0930 UTC on 3535 kHz

VK5AWI Nightly at 1030 UTC on kHz

VK6RAP Nightly at 2000 local on 146.700 MHz

VK6WIA Nightly (except Saturday) at 1200 UTC on 3.555 MHz



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- 144-148MHz transceive operation (better than 0.158uV sensitivity, 2W RF output), with highly sensitive wideband receiver coverage (130-174MHz) as standard!
- Custom microprocessor provides Australian version Auto Repeater Shift (ARS) for the easiest repeater operation, plus 53 tunable memories and 6 selectable tuning steps.
- A concise instruction manual with photographs and diagrams which takes you through all areas of operation.
- Each FT-26 comes with a superb long-life 7.2V 700mA/H NiCad pack as standard!
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- Inbuilt VOX circuitry allows hands free operation (with optional YH-2 headset)
- Inbuilt DTMF paging provides group or selective calling facilities
- Rubber gasket seals provide protection from the elements
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- Complete with 700mA/H NiCad, beltclip, protective carry case, a carry strap, antenna and approved AC charger.
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IC-R1

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